



# GTC-2000

**200 UST CAPACITY CLASS****US EPA TIER 4F**

# TELESCOPIC BOOM CRAWLER CRANE

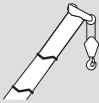
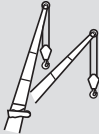
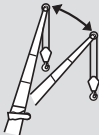


# DTI

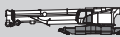
DEMAG TECH INSIDE



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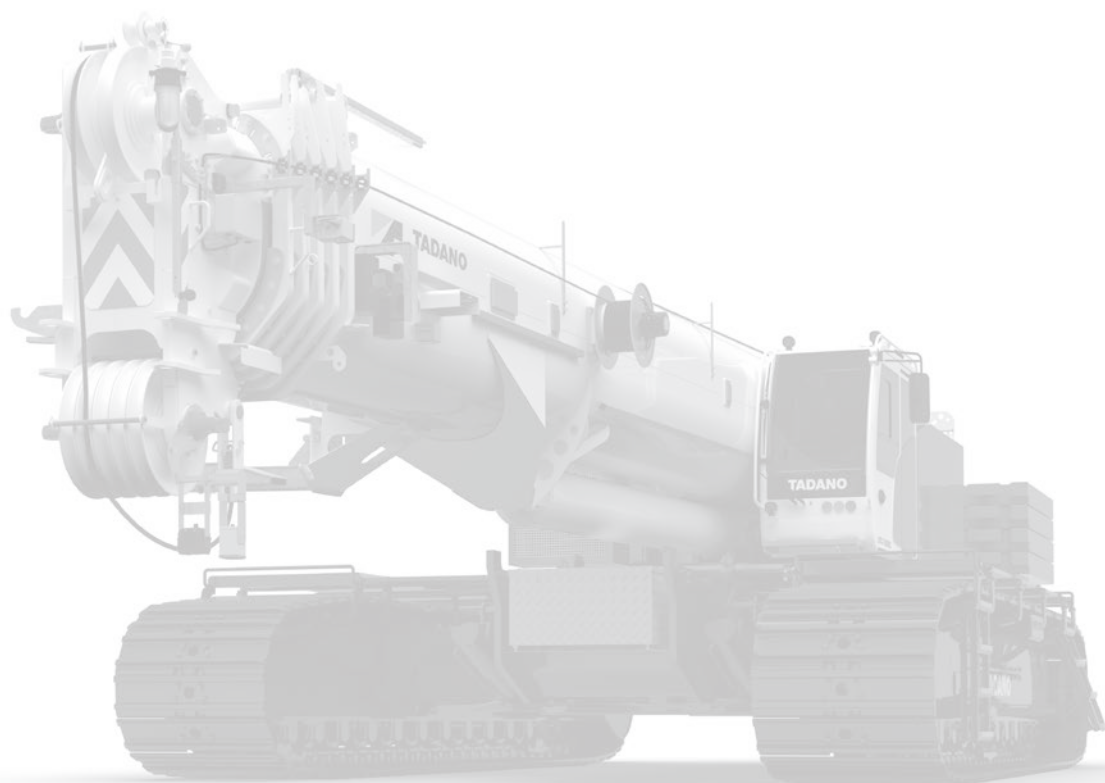
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# Key

|                                                                                     |                                      |                                                                                     |                                             |
|-------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------|
|    | Counterweight                        |    | Max. line pull                              |
|    | Track                                |    | Rope diameter                               |
|    | Radius                               |    | Rope length                                 |
|    | Main boom                            |    | Hook block (capacity-sheaves-rope diameter) |
|    | Folding swing-away jib               |    | Number of lines                             |
|    | Hydraulic swing-away jib             |    | Possible load of hook block                 |
|    | Roll/list angle                      |    | Number of sheaves in boom head              |
|    | Wind speed in ft/s (feet per second) |    | Distance head sheave axle – hook ground     |
|   | Track shoe width                     |   | Weight of hook block                        |
|  | 2-bar shoe                           |  | Track left                                  |
|  | Hook block                           |  | Track right                                 |
|  | Hoist 1                              |  | Extension beam                              |
|  | Hoist 2                              |  | Base crane                                  |
|  | Travel speed                         |  | Central ballast                             |
|  | Gradeability                         |  | Truck pay load                              |
|  | Slewing                              |  | Counterweight base plate                    |
|  | Boom telescoping                     |  | Counterweight plate                         |
|  | Boom elevation                       |  | Assembly weight                             |
|  | Working speeds                       |  | Transport variant                           |

# Highlights

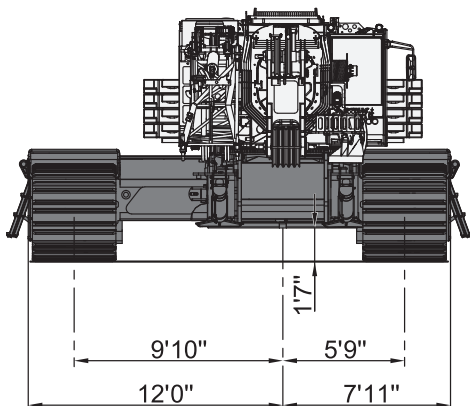
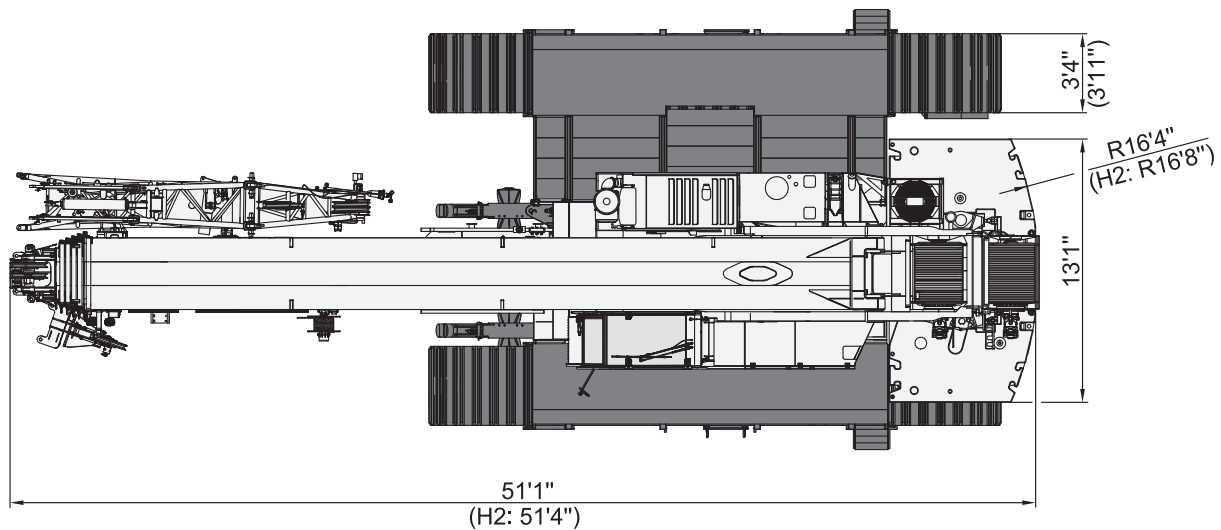
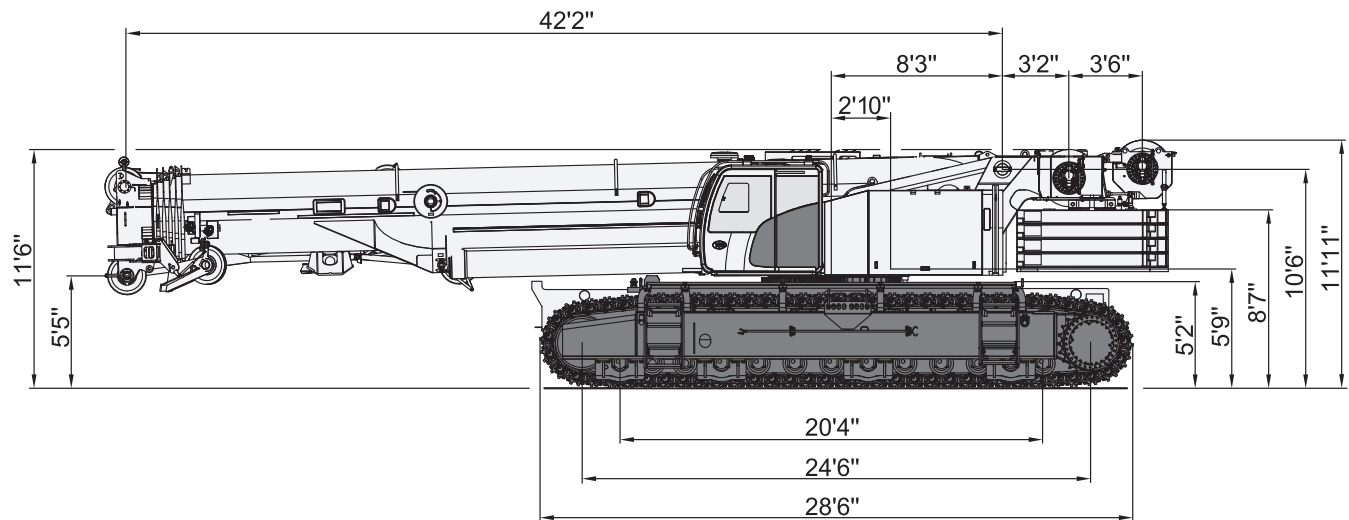
- ▶ 196.9 ft pinned boom; 16.4 ft to 75.5 ft jib (tiltable from 0° to 36°)
- ▶ Lifting capacities up to 4° roll/list angle, all „Pick & Carry“, jib capacities up to 1° roll/list angle
- ▶ Double hook operation with rooster sheave or jib
- ▶ Powerful hoists with 1.02 in. rope (30,640 lb pull / 456 ft/min. speed)
- ▶ Powerful, robust and versatile undercarriage with smart and comprehensive access concept
- ▶ Fully self rigging operation
- ▶ Remote control for all rigging and operating functions
- ▶ Best in class traction force (326,000 lbf)



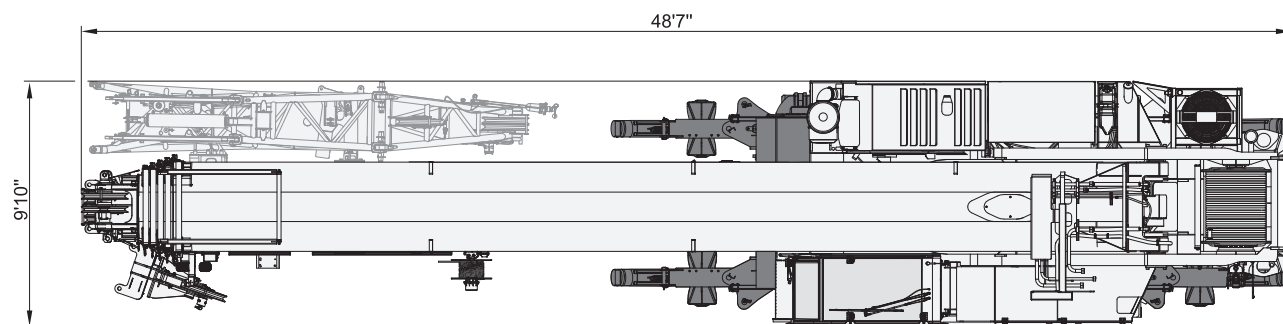
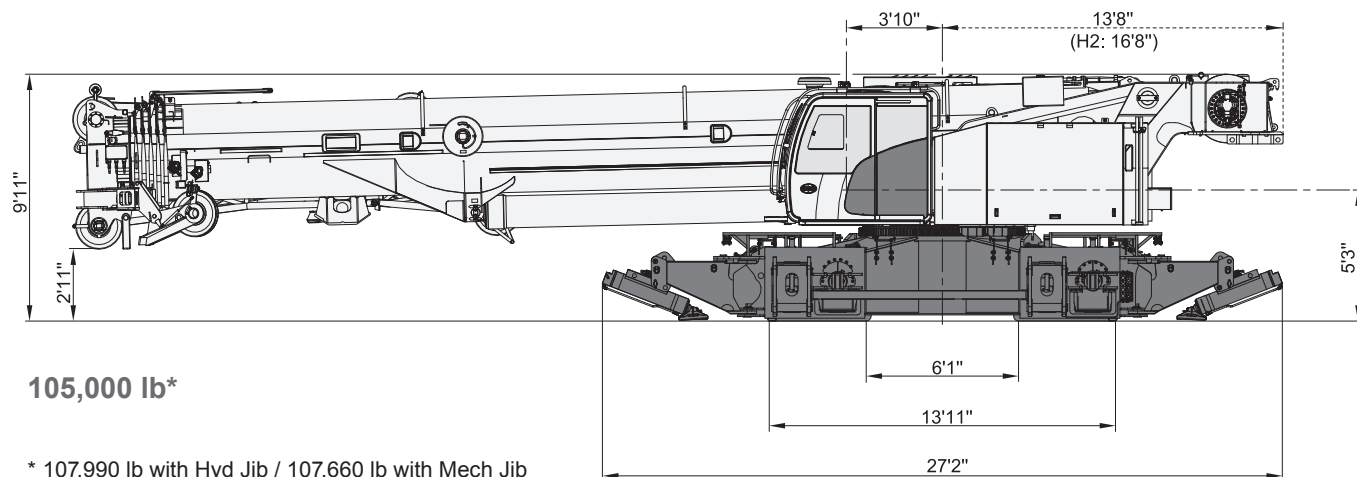


# Dimensions

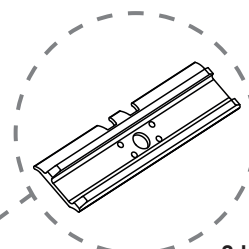
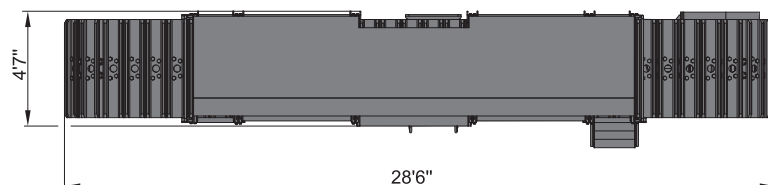
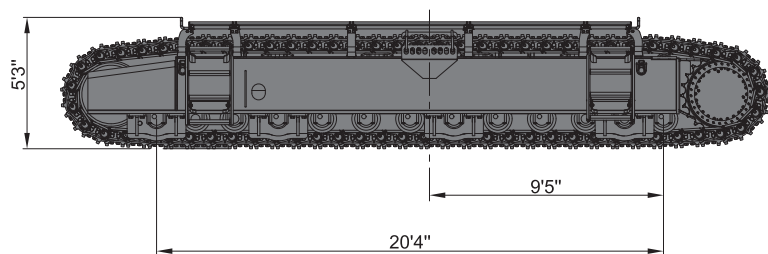
## Basic crane dimensions



# Specifications

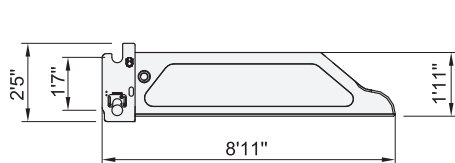


**40,800 lb (3.3 ft) / 43,000 lb (3.9 ft)**

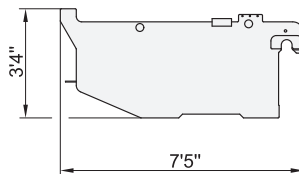


**2-bar shoe**

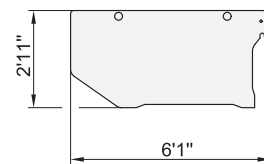
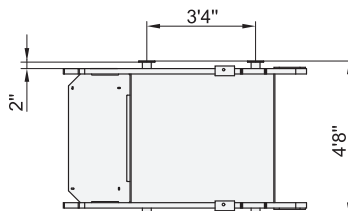
# Specifications



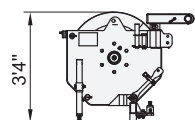
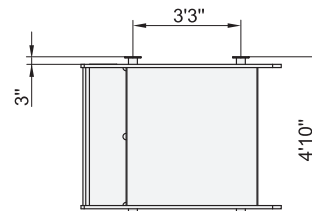
**3,040 lb**



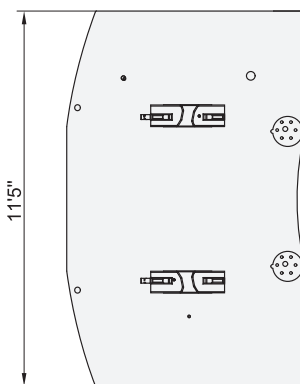
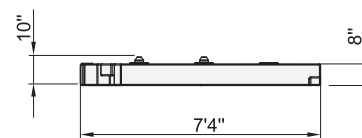
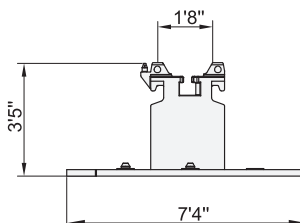
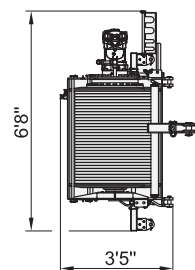
**16,540 lb**



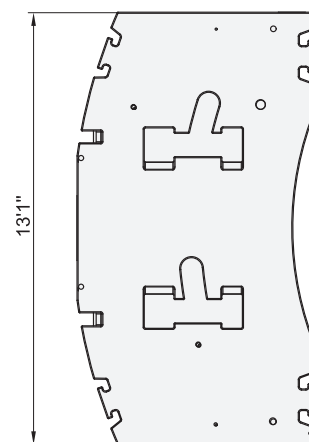
**16,540 lb**



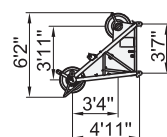
**5,070 lb**



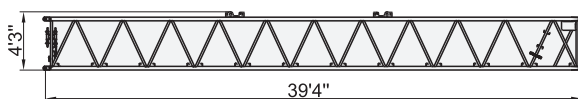
**1 x 11,025 lb**



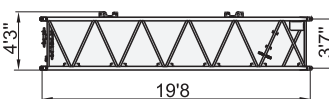
**4 x 22,050 lb**



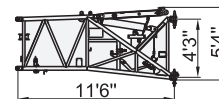
**1,010 lb**



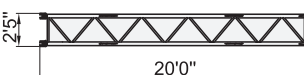
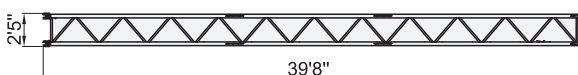
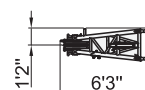
**1,900 lb**



**1,040 lb**



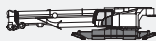
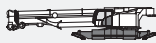
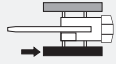
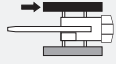
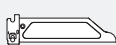
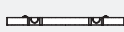
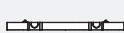
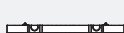
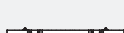
**1,650 lb / 1,980 lb\***



\* Hydraulic adjustable

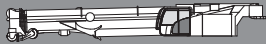
# Specifications

## Transport variants

|                                                                                            |  |  |         |        |         |        |        |        |         |        |        |        |        |        |        |        |        |        |        |         |        |        |        |        |        |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------|--------|---------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
|                                                                                            | [lb]                                                                              | #3                                                                                 |         |        |         | #4     |        |        |         | #5     |        |        |        | #6     |        |        |        | #6     |        |         |        |        |        |        |        |
|           | 105,000                                                                           | 1                                                                                  |         |        |         | 1      |        |        |         | 1      |        |        |        |        |        |        |        | 1      |        |         |        |        |        |        |        |
|  *        | 92,800                                                                            |                                                                                    |         |        |         |        |        |        |         |        |        |        |        | 1      |        |        |        |        |        |         |        |        |        |        |        |
|           | 40,800                                                                            |                                                                                    | 2       |        |         |        | 2      |        |         |        | 2      |        |        |        | 3      |        |        |        | 2      |         |        |        |        |        |        |
|           | 40,800                                                                            |                                                                                    | 2       |        |         |        |        | 3      |         |        | 3      |        |        |        |        | 4      |        |        |        | 3       |        |        |        |        |        |
|  1        | 3,040                                                                             |                                                                                    |         |        |         |        |        |        |         |        |        |        |        |        | 2      |        |        |        |        |         |        |        |        |        |        |
|  2        | 3,040                                                                             |                                                                                    |         |        |         |        |        |        |         |        |        |        |        |        | 2      |        |        |        |        |         |        |        |        |        |        |
|  3        | 3,040                                                                             |                                                                                    |         |        |         |        |        |        |         |        |        |        |        |        | 2      |        |        |        |        |         |        |        |        |        |        |
|  4      | 3,040                                                                             |                                                                                    |         |        |         |        |        |        |         |        |        |        |        |        | 2      |        |        |        |        |         |        |        |        |        |        |
|         | 16,540                                                                            |                                                                                    | 2       |        |         |        | 2      |        |         |        | 2      |        |        |        | 2      |        |        |        |        |         | 4      |        |        |        |        |
|         | 16,540                                                                            |                                                                                    | 2       |        |         |        | 2      |        |         |        |        | 3      |        |        | 2      |        |        |        |        |         | 4      |        |        |        |        |
|         | 11,025                                                                            | 1                                                                                  |         |        |         |        |        | 3      |         |        |        |        | 4      |        |        | 3      |        |        |        |         | 4      |        |        |        |        |
|         | 22,050                                                                            |                                                                                    |         | 3      |         |        |        | 3      |         |        |        |        | 4      |        |        |        | 5      |        |        |         |        | 5      |        |        |        |
|         | 22,050                                                                            |                                                                                    |         | 3      |         |        |        |        | 4       |        |        |        | 4      |        |        |        | 5      |        |        |         |        | 5      |        |        |        |
|         | 22,050                                                                            |                                                                                    |         | 3      |         |        |        |        | 4       |        |        |        |        | 5      |        |        |        | 6      |        |         |        | 6      |        |        |        |
|         | 22,050                                                                            |                                                                                    |         | 3      |         |        |        |        | 4       |        |        |        | 5      |        |        |        | 6      |        |        |         |        | 6      |        |        |        |
|  2 (H2) | 5,070                                                                             |                                                                                    |         | 3      |         |        |        |        | 4       |        |        |        | 5      |        |        | 4      |        |        | 2      |         |        |        |        |        |        |
|  3      | 2,430                                                                             | 1                                                                                  |         |        |         |        | 2      |        |         |        |        |        | 5      |        | 2      |        |        |        |        | 3       |        |        |        |        |        |
|  [lb]   |                                                                                   | 118,455                                                                            | 114,680 | 93,270 | 105,000 | 76,100 | 73,875 | 71,220 | 105,000 | 57,340 | 57,340 | 55,125 | 51,600 | 92,800 | 47,670 | 51,825 | 45,870 | 44,105 | 44,100 | 105,000 | 45,870 | 43,230 | 44,105 | 44,100 | 44,100 |

\* without extension beams

# Specifications

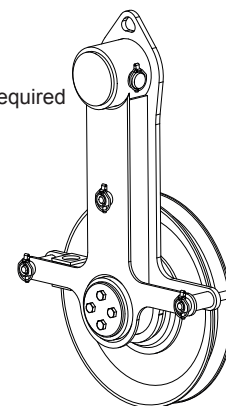
|  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                                                                   |  |  |  |  |
| 1                                                                                 | 446 ft/min                                                                        | 30,400 lbf                                                                        | 1.04"                                                                             | 804 ft                                                                            |
| 2                                                                                 | 446 ft/min                                                                        | 30,400 lbf                                                                        | 1.04"                                                                             | 804 ft                                                                            |
|  | 1,6 rpm                                                                           |                                                                                   |                                                                                   |                                                                                   |
|  | approx. 530 s<br>(42.3 - 196.9 ft)                                                |                                                                                   |                                                                                   |                                                                                   |
|  | approx. 49 s<br>(-1,4° - 82°)                                                     |                                                                                   |                                                                                   |                                                                                   |

|  |                                                 |
|-----------------------------------------------------------------------------------|-------------------------------------------------|
|  | Max. 1.43 mph                                   |
|  | 26.5° / 50 % without load<br>4° / 7 % with load |

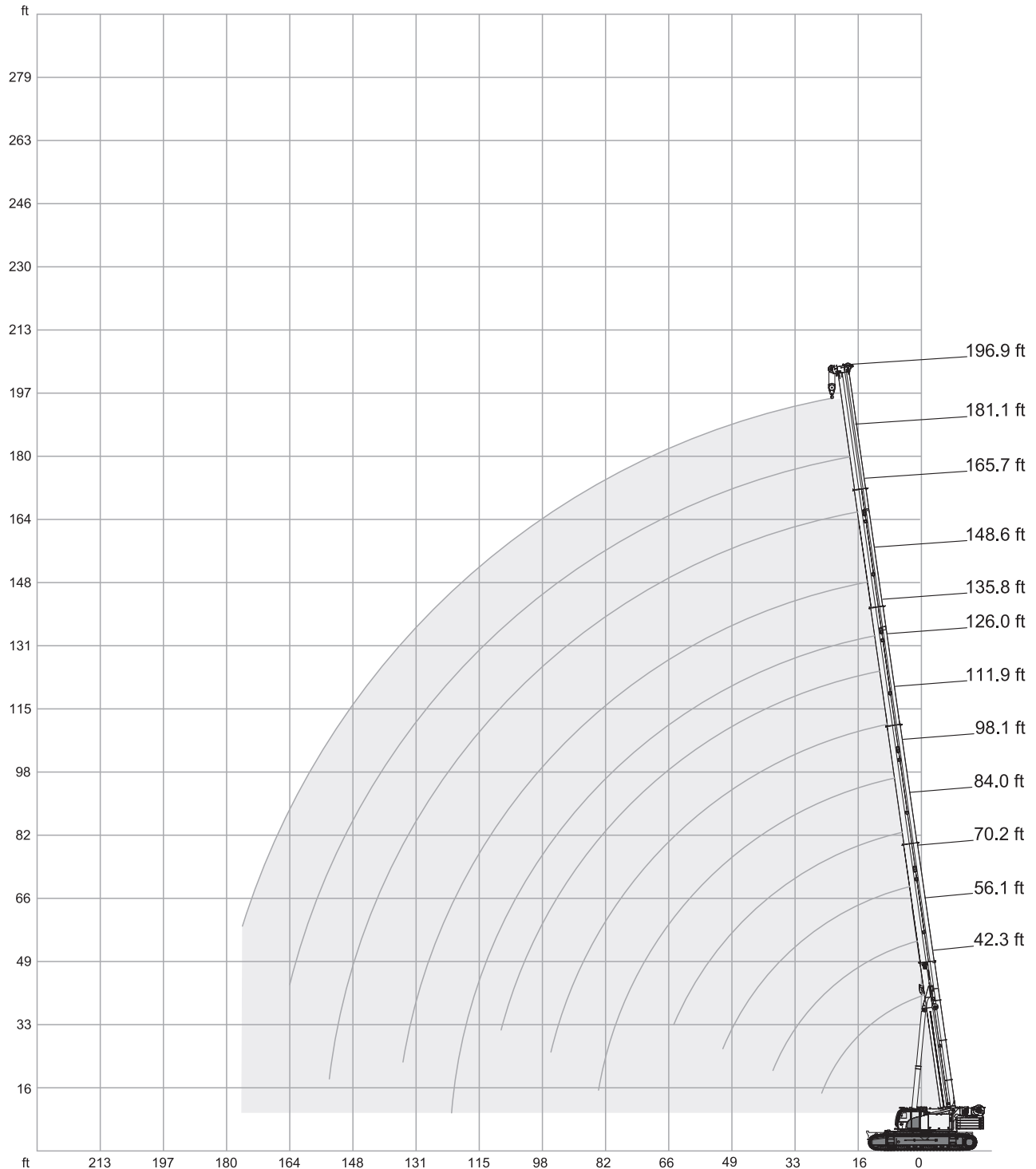
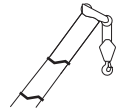
|    |  |  |  |  |  |
|----|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1  | 30,400                                                                            | 16-0-26                                                                             | 5                                                                                   | 0,880 lb                                                                            | 8.2 ft                                                                              |
| 2  | 60,400                                                                            | 41-1-26                                                                             | 5                                                                                   | 1,980 lb                                                                            | 10.2 ft                                                                             |
| 3  | 90,300                                                                            | 41-1-26                                                                             | 5                                                                                   | 1,980 lb                                                                            | 10.2 ft                                                                             |
| 4  | 119,700                                                                           | 100-3-26                                                                            | 5                                                                                   | 2,430 lb                                                                            | 10.5 ft                                                                             |
| 5  | 149,000                                                                           | 100-3-26                                                                            | 5                                                                                   | 2,430 lb                                                                            | 10.5 ft                                                                             |
| 6  | 177,900                                                                           | 100-3-26                                                                            | 5                                                                                   | 2,430 lb                                                                            | 10.5 ft                                                                             |
| 7  | 206,600                                                                           | 100-3-26                                                                            | 5                                                                                   | 2,430 lb                                                                            | 10.5 ft                                                                             |
| 8  | 234,900                                                                           | 160-5-26                                                                            | 5                                                                                   | 2,870 lb                                                                            | 10.8 ft                                                                             |
| 9  | 263,000                                                                           | 160-5-26                                                                            | 5                                                                                   | 2,870 lb                                                                            | 10.8 ft                                                                             |
| 10 | 290,700                                                                           | 160-5-26                                                                            | 5                                                                                   | 2,870 lb                                                                            | 10.8 ft                                                                             |
| 11 | 318,100                                                                           | 160-5-26                                                                            | 5 + 1*                                                                              | 2,870 lb                                                                            | 10.8 ft                                                                             |
| 12 | 345,000                                                                           | 200-7-26                                                                            | 5 + 1**                                                                             | 5,740 lb                                                                            | 10.8 ft                                                                             |

\* Heavy lift sheave required

\*\* Heavy lift sheave and 7 sheaves hook block required



# HA





## HA

| 99,200 lb + 33,100 lb |  | 19.7 ft  |        |       |       |       | 32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5 |
|-----------------------|--|----------|--------|-------|-------|-------|-----------|-------|-------|-------|-------|---------|-------|-------|-------|-------|------------|
|                       |  | 42.3 ft  |        |       |       |       | 56.1 ft   |       |       |       |       | 70.2 ft |       |       |       |       |            |
|                       |  | 0,3°     | 1°     | 2°    | 3°    | 4°    | 0,3°      | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    |            |
| ft                    |  | 1,000 lb |        |       |       |       |           |       |       |       |       |         |       |       |       |       | ft         |
| 10                    |  | 342.1**  | 304.6* | 218.9 | 163.5 | 127.9 | 329.0**   | 271.6 | 199.6 | 152.7 | 121.1 | 286.6   | 241.0 | 181.5 | -     | -     | 10         |
| 12                    |  | 305.5*   | 293.8* | 212.8 | 159.5 | 125.2 | 304.7*    | 263.6 | 194.5 | 149.3 | 118.6 | 271.8   | 233.9 | 177.3 | 138.6 | -     | 12         |
| 14                    |  | 274.8    | 273.7  | 207.0 | 155.9 | 122.6 | 274.2     | 256.1 | 189.7 | 146.1 | 116.3 | 253.0   | 222.1 | 173.3 | 135.7 | 110.0 | 14         |
| 16                    |  | 249.6    | 248.5  | 201.3 | 152.2 | 120.2 | 248.5     | 245.2 | 185.0 | 142.8 | 114.2 | 234.2   | 214.5 | 168.8 | 132.9 | 107.8 | 16         |
| 18                    |  | 229.3    | 228.3  | 195.8 | 148.7 | 117.8 | 228.4     | 227.3 | 180.6 | 139.9 | 112.0 | 218.8   | 207.0 | 165.0 | 130.2 | 105.8 | 18         |
| 20                    |  | 210.2    | 209.3  | 190.3 | 145.2 | 115.3 | 209.5     | 208.4 | 176.2 | 137.1 | 109.9 | 204.2   | 198.3 | 161.2 | 127.7 | 103.7 | 20         |
| 24                    |  | 176.4    | 175.5  | 174.3 | 138.0 | 110.1 | 175.5     | 174.4 | 166.2 | 131.5 | 106.0 | 173.5   | 172.2 | 153.5 | 122.9 | 99.8  | 24         |
| 28                    |  | 148.7    | 147.9  | 146.9 | 129.8 | 104.3 | 149.5     | 148.7 | 147.5 | 125.5 | 102.1 | 146.0   | 145.6 | 142.6 | 117.3 | 96.5  | 28         |
| 32                    |  | 127.8    | 127.3  | 126.4 | 108.3 | 88.3  | 128.4     | 127.8 | 126.6 | 120.3 | 98.2  | 127.6   | 126.9 | 125.5 | 112.9 | 93.2  | 32         |
| 36                    |  | -        | -      | -     | -     | -     | 110.0     | 109.2 | 108.1 | 105.8 | 94.0  | 109.0   | 108.2 | 106.9 | 101.3 | 90.1  | 36         |
| 40                    |  | -        | -      | -     | -     | -     | 94.4      | 93.6  | 92.5  | 91.4  | 88.6  | 92.0    | 92.0  | 91.7  | 91.2  | 86.1  | 40         |
| 48                    |  | -        | -      | -     | -     | -     | -         | -     | -     | -     | -     | 71.8    | 71.2  | 70.2  | 69.2  | 68.4  | 48         |
| 56                    |  | -        | -      | -     | -     | -     | -         | -     | -     | -     | -     | 57.3    | 57.1  | 56.7  | 56.4  | 56.0  | 56         |
| 1)                    |  | 48.1     | 48.1   | 48.1  | 48.1  | 48.1  | 35.1      | 35.1  | 35.1  | 35.1  | 35.1  | 26.9    | 26.9  | 26.9  | 26.9  | 26.9  | 1)         |

|     |  | 84.0 ft  |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |       |      |      |      |     |
|-----|--|----------|-------|-------|-------|------|---------|-------|-------|------|------|----------|-------|------|------|------|-----|
|     |  | 0,3°     | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°    | 2°   | 3°   | 4°   |     |
| ft  |  | 1,000 lb |       |       |       |      |         |       |       |      |      |          |       |      |      |      | ft  |
| 12  |  | 231.7    | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 12  |
| 14  |  | 220.3    | 192.7 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 14  |
| 16  |  | 208.6    | 184.8 | 145.9 | 115.3 | -    | 181.9   | -     | -     | -    | -    | -        | -     | -    | -    | -    | 16  |
| 18  |  | 195.7    | 179.3 | 145.9 | 115.3 | 95.0 | 174.4   | 143.7 | 114.4 | -    | -    | -        | -     | -    | -    | -    | 18  |
| 20  |  | 182.9    | 176.1 | 145.5 | 115.3 | 95.0 | 166.8   | 143.7 | 114.4 | 91.1 | 74.5 | 138.2    | 115.5 | 84.7 | -    | -    | 20  |
| 24  |  | 160.8    | 160.2 | 138.8 | 114.0 | 93.7 | 148.7   | 141.5 | 113.5 | 91.1 | 74.5 | 131.4    | 115.5 | 84.7 | 66.8 | 55.5 | 24  |
| 28  |  | 143.3    | 142.4 | 129.7 | 110.0 | 91.4 | 132.3   | 131.2 | 109.2 | 91.1 | 74.5 | 122.0    | 114.0 | 84.7 | 66.8 | 54.5 | 28  |
| 32  |  | 124.7    | 123.2 | 119.4 | 106.1 | 88.8 | 119.2   | 118.3 | 105.4 | 91.1 | 74.5 | 111.5    | 109.7 | 84.7 | 66.8 | 54.0 | 32  |
| 36  |  | 106.4    | 105.1 | 104.5 | 98.6  | 84.8 | 105.4   | 104.4 | 98.2  | 90.0 | 74.5 | 101.1    | 100.2 | 84.7 | 66.8 | 54.0 | 36  |
| 40  |  | 93.5     | 92.4  | 91.1  | 89.6  | 81.3 | 91.5    | 90.4  | 89.5  | 87.4 | 74.3 | 90.7     | 89.6  | 83.5 | 66.8 | 54.0 | 40  |
| 48  |  | 70.7     | 69.9  | 69.0  | 68.6  | 68.4 | 72.7    | 71.9  | 70.8  | 69.6 | 68.4 | 70.8     | 69.9  | 68.7 | 64.1 | 54.0 | 48  |
| 56  |  | 58.7     | 58.2  | 57.4  | 56.6  | 55.7 | 57.5    | 57.0  | 56.0  | 55.1 | 54.1 | 55.8     | 55.0  | 54.0 | 52.9 | 50.5 | 56  |
| 64  |  | 48.0     | 47.5  | 47.0  | 46.4  | 45.7 | 46.9    | 46.3  | 45.6  | 44.8 | 44.1 | 45.1     | 44.5  | 43.6 | 42.8 | 41.9 | 64  |
| 72  |  | 40.1     | 39.8  | 39.4  | 39.0  | 38.3 | 39.0    | 38.5  | 37.9  | 37.4 | 36.8 | 38.0     | 37.6  | 37.6 | 37.8 | 37.1 | 72  |
| 80  |  | -        | -     | -     | -     | -    | 33.1    | 32.7  | 32.3  | 31.7 | 31.2 | 34.3     | 34.0  | 33.4 | 32.8 | 32.3 | 80  |
| 88  |  | -        | -     | -     | -     | -    | 17.0    | 17.0  | 16.5  | 16.5 | 16.5 | 29.6     | 29.3  | 28.8 | 28.4 | 27.8 | 88  |
| 96  |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 25.8     | 25.5  | 25.2 | 24.8 | 24.3 | 96  |
| 104 |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 19.8     | 19.7  | 19.5 | 19.3 | 18.8 | 104 |
| 1)  |  | 20.9     | 20.9  | 20.9  | 20.9  | 20.9 | 16.8    | 16.8  | 16.8  | 16.8 | 16.8 | 13.0     | 13.0  | 13.0 | 13.0 | 13.0 | 1)  |

\* Heavy lift sheave required

\*\* Heavy lift sheave and 7 sheaves hook block required

1) Capacities with horizontal boom



## HA

|  99,200 lb +  33,100 lb |  |  19.7 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                        |  | 91.7                                                                                      | 83.8 | 67.5 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 81.2                                                                                      | 79.0 | 67.0 | 52.9 | 42.8 | 74.8                                                                                        | 67.9 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 73.4                                                                                      | 72.4 | 65.4 | 52.9 | 42.8 | 67.0                                                                                        | 65.2 | 50.7 | 41.0 | -    | 62.9     | 54.8 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 68.5                                                                                      | 68.0 | 63.3 | 52.9 | 42.8 | 60.8                                                                                        | 60.3 | 50.7 | 40.1 | 33.3 | 57.3     | 52.6 | 40.3 | 32.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 63.7                                                                                      | 63.7 | 61.1 | 52.8 | 42.8 | 55.1                                                                                        | 55.1 | 50.3 | 39.1 | 33.3 | 52.0     | 50.1 | 40.1 | 32.0 | 26.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 56.1                                                                                      | 56.1 | 56.0 | 51.4 | 42.8 | 46.5                                                                                        | 46.3 | 44.6 | 39.0 | 33.2 | 43.8     | 42.8 | 39.5 | 31.7 | 25.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 50.1                                                                                      | 50.1 | 50.2 | 48.2 | 42.8 | 39.5                                                                                        | 39.5 | 38.6 | 37.6 | 32.3 | 37.4     | 36.5 | 36.0 | 31.0 | 25.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 45.4                                                                                      | 45.1 | 44.6 | 43.6 | 41.8 | 34.7                                                                                        | 34.2 | 34.1 | 33.4 | 31.1 | 32.3     | 31.6 | 31.5 | 29.6 | 24.9 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 38.7                                                                                      | 38.3 | 37.4 | 36.8 | 35.9 | 31.6                                                                                        | 30.7 | 30.7 | 30.7 | 29.6 | 28.1     | 27.4 | 27.4 | 27.2 | 24.3 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 32.7                                                                                      | 32.3 | 31.6 | 31.0 | 30.4 | 28.7                                                                                        | 28.1 | 28.1 | 28.1 | 27.9 | 24.9     | 24.5 | 24.4 | 24.3 | 22.5 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 28.1                                                                                      | 27.7 | 27.1 | 26.6 | 26.0 | 26.4                                                                                        | 25.8 | 25.8 | 25.8 | 25.8 | 22.3     | 22.2 | 22.2 | 22.1 | 20.6 | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 24.2                                                                                      | 23.8 | 23.3 | 22.9 | 22.4 | 24.2                                                                                        | 23.8 | 23.5 | 23.2 | 22.7 | 20.2     | 20.2 | 20.2 | 20.2 | 19.0 | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 21.1                                                                                      | 20.6 | 20.4 | 20.2 | 20.2 | 21.3                                                                                        | 21.1 | 20.6 | 20.2 | 19.7 | 18.5     | 18.5 | 18.5 | 18.5 | 17.4 | 104                                                                                 |
| 112                                                                                                                                                                                       |  | 18.4                                                                                      | 18.2 | 17.8 | 17.5 | 17.1 | 18.6                                                                                        | 18.4 | 18.0 | 17.7 | 17.3 | 17.1     | 17.1 | 17.1 | 17.1 | 16.0 | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 16.5                                                                                        | 16.2 | 15.9 | 15.6 | 15.2 | 15.8     | 15.8 | 15.7 | 15.4 | 14.8 | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 14.5                                                                                        | 14.3 | 14.1 | 13.9 | 13.6 | 14.5     | 14.3 | 14.0 | 13.7 | 13.2 | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 12.9     | 12.7 | 12.4 | 12.0 | 11.8 | 136                                                                                 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 11.3     | 11.3 | 11.1 | 10.9 | 10.6 | 144                                                                                 |
| 1)                                                                                                                                                                                        |  | 9.9                                                                                       | 9.9  | 9.9  | 9.9  | 9.9  | 8.8                                                                                         | 8.8  | 8.8  | 8.8  | 8.8  | 6.2      | 6.2  | 6.2  | 6.2  | 6.2  | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                     |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                  |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 36                                                                                                                                                                  |  | 51.2     | 44.9 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                  |
| 40                                                                                                                                                                  |  | 48.2     | 44.2 | 32.6 | 25.7 | 20.7 | 44.2     | 37.5 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                  |
| 48                                                                                                                                                                  |  | 41.5     | 40.1 | 32.6 | 24.9 | 20.7 | 39.5     | 36.6 | 26.7 | 20.1 | 15.7 | 33.3     | 27.6 | 20.5 | 15.2 | 11.2 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 35.4     | 35.1 | 32.2 | 24.9 | 20.1 | 34.6     | 33.5 | 26.7 | 20.1 | 15.7 | 30.6     | 25.9 | 20.5 | 15.2 | 11.2 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 30.5     | 30.5 | 30.0 | 24.9 | 19.6 | 30.0     | 29.9 | 26.0 | 19.9 | 15.7 | 27.0     | 24.0 | 20.5 | 15.2 | 11.2 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 26.5     | 26.5 | 26.5 | 24.0 | 19.6 | 26.1     | 26.1 | 23.9 | 19.8 | 15.7 | 23.4     | 21.7 | 19.9 | 15.2 | 11.2 | 72                                                                                  |
| 80                                                                                                                                                                  |  | 23.6     | 23.4 | 23.6 | 21.7 | 19.6 | 22.9     | 22.9 | 21.4 | 19.8 | 15.6 | 20.5     | 19.0 | 18.3 | 15.2 | 11.2 | 80                                                                                  |
| 88                                                                                                                                                                  |  | 20.9     | 20.9 | 20.9 | 19.4 | 19.1 | 20.3     | 20.3 | 19.0 | 18.8 | 15.2 | 18.0     | 16.7 | 16.8 | 15.1 | 11.2 | 88                                                                                  |
| 96                                                                                                                                                                  |  | 18.9     | 18.9 | 18.7 | 17.5 | 17.5 | 18.2     | 18.2 | 16.9 | 16.9 | 15.2 | 16.0     | 14.8 | 14.9 | 14.3 | 11.2 | 96                                                                                  |
| 104                                                                                                                                                                 |  | 17.0     | 17.0 | 17.0 | 15.9 | 15.9 | 16.3     | 16.3 | 15.2 | 15.0 | 14.8 | 14.1     | 13.2 | 13.2 | 13.0 | 11.2 | 104                                                                                 |
| 112                                                                                                                                                                 |  | 15.6     | 15.6 | 15.4 | 14.5 | 14.5 | 14.5     | 14.5 | 13.6 | 13.6 | 13.6 | 12.7     | 11.8 | 11.6 | 11.6 | 11.2 | 112                                                                                 |
| 120                                                                                                                                                                 |  | 14.2     | 14.2 | 14.1 | 13.2 | 13.2 | 13.1     | 13.1 | 12.1 | 12.1 | 12.1 | 11.1     | 10.5 | 10.3 | 10.3 | 10.3 | 120                                                                                 |
| 128                                                                                                                                                                 |  | 13.0     | 13.0 | 13.0 | 12.1 | 12.1 | 11.8     | 11.8 | 11.0 | 11.0 | 11.0 | 9.9      | 9.3  | 9.3  | 9.3  | 9.3  | 128                                                                                 |
| 136                                                                                                                                                                 |  | 11.9     | 11.9 | 11.8 | 11.0 | 11.0 | 10.6     | 10.6 | 9.9  | 9.9  | 9.9  | 8.8      | 8.3  | 8.2  | 8.2  | 8.3  | 136                                                                                 |
| 144                                                                                                                                                                 |  | 10.9     | 10.6 | 10.2 | 10.0 | 9.8  | 9.5      | 9.5  | 8.9  | 8.9  | 8.7  | 8.0      | 7.3  | 7.3  | 7.3  | 7.3  | 144                                                                                 |
| 152                                                                                                                                                                 |  | 9.6      | 9.3  | 9.1  | 8.9  | 8.5  | 8.7      | 8.5  | 8.0  | 7.8  | 7.8  | 7.2      | 6.5  | 6.5  | 6.5  | 6.5  | 152                                                                                 |
| 160                                                                                                                                                                 |  | -        | -    | -    | -    | -    | 7.8      | 7.8  | 7.1  | 7.1  | 7.1  | 6.4      | 5.8  | 5.8  | 5.8  | 5.8  | 160                                                                                 |
| 168                                                                                                                                                                 |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 5.6      | 5.2  | 5.2  | 5.2  | 5.2  | 168                                                                                 |
| 176                                                                                                                                                                 |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 4.9      | 4.5  | 4.5  | 4.5  | 4.5  | 176                                                                                 |
| 1)                                                                                                                                                                  |  | 3.7      | 3.7  | 3.7  | 3.7  | 3.7  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

1) Capacities with horizontal boom

## HA

|  77,200 lb +  33,100 lb |  |  19.7 ft |        |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|                         |  | 42.3 ft                                                                                   |        |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°     | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
|                                                                                                                                                                                           |  | 1,000 lb                                                                                  |        |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 10                                                                                                                                                                                        |  | 336.5**                                                                                   | 304.6* | 218.9 | 163.5 | 127.9 | 328.5**                                                                                     | 271.6 | 199.6 | 152.7 | 121.1 | 286.6   | 241.0 | 181.5 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                                        |  | 300.3*                                                                                    | 292.4* | 212.8 | 159.5 | 125.2 | 299.2*                                                                                      | 263.6 | 194.5 | 149.3 | 118.6 | 271.8   | 233.9 | 177.3 | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                                        |  | 269.8                                                                                     | 269.3  | 207.0 | 155.9 | 122.6 | 269.3                                                                                       | 256.1 | 189.7 | 146.1 | 116.3 | 253.0   | 222.1 | 173.3 | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                                        |  | 244.9                                                                                     | 244.1  | 201.3 | 152.2 | 120.2 | 244.1                                                                                       | 241.9 | 185.0 | 142.8 | 114.2 | 234.2   | 214.5 | 168.8 | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                                        |  | 223.5                                                                                     | 222.4  | 195.8 | 148.7 | 117.8 | 222.5                                                                                       | 221.3 | 180.6 | 139.9 | 112.0 | 216.9   | 207.0 | 165.0 | 130.2 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                                        |  | 202.6                                                                                     | 201.5  | 189.3 | 145.2 | 115.3 | 201.7                                                                                       | 200.4 | 176.2 | 137.1 | 109.9 | 199.6   | 197.2 | 161.2 | 127.7 | 103.7 | 20                                                                                  |
| 24                                                                                                                                                                                        |  | 166.2                                                                                     | 165.3  | 164.2 | 138.0 | 110.1 | 167.0                                                                                       | 166.2 | 163.2 | 131.5 | 106.0 | 162.9   | 161.8 | 152.9 | 122.9 | 99.8  | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 139.3                                                                                     | 138.6  | 137.3 | 129.7 | 104.3 | 140.5                                                                                       | 139.4 | 137.9 | 125.5 | 102.1 | 139.0   | 137.7 | 135.6 | 117.3 | 96.5  | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 114.3                                                                                     | 113.6  | 112.2 | 108.2 | 88.3  | 115.5                                                                                       | 114.5 | 113.5 | 111.6 | 98.2  | 114.1   | 113.0 | 111.1 | 108.7 | 93.2  | 32                                                                                  |
| 36                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | 98.4                                                                                        | 97.4  | 96.3  | 94.9  | 88.9  | 96.2    | 95.8  | 95.0  | 94.0  | 86.2  | 36                                                                                  |
| 40                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | 82.1                                                                                        | 81.2  | 80.3  | 79.3  | 78.2  | 82.3    | 81.4  | 80.1  | 79.0  | 77.7  | 40                                                                                  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 63.9    | 63.8  | 63.0  | 62.1  | 61.3  | 48                                                                                  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 50.9    | 50.5  | 50.0  | 49.2  | 48.7  | 56                                                                                  |
| 1)                                                                                                                                                                                        |  | 48.1                                                                                      | 48.1   | 48.1  | 48.1  | 48.1  | 35.1                                                                                        | 35.1  | 35.1  | 35.1  | 35.1  | 26.9    | 26.9  | 26.9  | 26.9  | 26.9  | 1)                                                                                  |

|   |  | 84.0 ft  |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |       |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|-------|-------|-------|------|---------|-------|-------|------|------|----------|-------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°     | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°    | 2°   | 3°   | 4°   | ft                                                                                  |
|                                                                                                                                                                     |  | 1,000 lb |       |       |       |      |         |       |       |      |      |          |       |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 231.7    | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 220.3    | 192.7 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 208.6    | 184.8 | 145.9 | 115.3 | -    | 181.9   | -     | -     | -    | -    | -        | -     | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 195.7    | 179.3 | 145.9 | 115.3 | 95.0 | 174.4   | 143.7 | 114.4 | -    | -    | -        | -     | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 182.7    | 175.7 | 145.5 | 115.3 | 95.0 | 166.8   | 143.7 | 114.4 | 91.1 | 74.5 | 138.2    | 115.5 | 84.7 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 155.7    | 153.7 | 138.8 | 114.0 | 93.7 | 147.1   | 139.9 | 113.5 | 91.1 | 74.5 | 131.4    | 115.5 | 84.7 | 66.8 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 130.0    | 129.1 | 126.8 | 110.0 | 91.4 | 123.6   | 122.0 | 109.2 | 91.1 | 74.5 | 119.0    | 112.9 | 84.7 | 66.8 | 54.5 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 113.1    | 111.8 | 109.7 | 105.1 | 88.8 | 106.9   | 106.5 | 103.8 | 91.1 | 74.5 | 102.5    | 101.0 | 84.7 | 66.8 | 54.0 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 96.4     | 95.3  | 93.6  | 91.9  | 84.5 | 95.3    | 94.5  | 93.0  | 86.2 | 74.5 | 89.7     | 88.4  | 80.8 | 66.8 | 54.0 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 81.0     | 80.8  | 80.5  | 80.0  | 79.1 | 83.3    | 82.3  | 81.0  | 79.5 | 73.4 | 78.2     | 77.1  | 75.4 | 66.3 | 54.0 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 64.2     | 63.5  | 62.5  | 61.5  | 60.5 | 62.8    | 62.2  | 61.0  | 60.0 | 58.9 | 61.1     | 60.1  | 58.9 | 57.6 | 52.3 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 50.6     | 50.1  | 49.3  | 48.6  | 47.9 | 49.4    | 48.9  | 48.0  | 47.1 | 46.2 | 47.6     | 47.0  | 46.3 | 46.4 | 44.6 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 41.1     | 40.7  | 40.2  | 39.5  | 38.9 | 40.0    | 39.4  | 38.7  | 38.0 | 37.5 | 40.9     | 40.5  | 40.0 | 39.3 | 38.6 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 34.3     | 33.9  | 33.4  | 33.0  | 32.5 | 34.0    | 34.0  | 33.8  | 33.8 | 33.4 | 34.3     | 33.9  | 33.2 | 32.8 | 32.1 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -        | -     | -     | -     | -    | 30.2    | 30.0  | 29.5  | 29.1 | 28.5 | 29.0     | 28.6  | 28.2 | 27.6 | 27.1 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -        | -     | -     | -     | -    | 17.0    | 17.0  | 16.5  | 16.5 | 16.5 | 24.8     | 24.6  | 24.2 | 23.7 | 23.3 | 88                                                                                  |
| 96                                                                                                                                                                  |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 21.5     | 21.3  | 21.0 | 20.5 | 20.2 | 96                                                                                  |
| 104                                                                                                                                                                 |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 16.2     | 15.9  | 15.8 | 15.8 | 15.8 | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 20.9     | 20.9  | 20.9  | 20.9  | 20.9 | 16.8    | 16.8  | 16.8  | 16.8 | 16.8 | 13.0     | 13.0  | 13.0 | 13.0 | 13.0 | 1)                                                                                  |

\* Heavy lift sheave required

\*\* Heavy lift sheave and 7 sheaves hook block required

1) Capacities with horizontal boom



## HA

|  77,200 lb +  33,100 lb |  |  19.7 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                        |  | 91.7                                                                                      | 83.8 | 67.5 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 81.2                                                                                      | 79.0 | 67.0 | 52.9 | 42.8 | 74.8                                                                                        | 67.9 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 73.4                                                                                      | 72.4 | 65.4 | 52.9 | 42.8 | 67.0                                                                                        | 65.2 | 50.7 | 41.0 | -    | 62.9     | 54.8 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 68.5                                                                                      | 68.0 | 63.3 | 52.9 | 42.8 | 60.8                                                                                        | 60.3 | 50.7 | 40.1 | 33.3 | 57.3     | 52.6 | 40.3 | 32.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 63.7                                                                                      | 63.7 | 61.1 | 52.8 | 42.8 | 55.1                                                                                        | 55.1 | 50.3 | 39.1 | 33.3 | 52.0     | 50.1 | 40.1 | 32.0 | 26.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 56.1                                                                                      | 56.1 | 55.9 | 51.4 | 42.8 | 46.5                                                                                        | 46.3 | 44.6 | 39.0 | 33.2 | 43.8     | 42.8 | 39.5 | 31.7 | 25.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 48.6                                                                                      | 48.2 | 47.5 | 45.8 | 42.1 | 39.5                                                                                        | 39.5 | 38.6 | 37.6 | 32.3 | 37.4     | 36.5 | 36.0 | 31.0 | 25.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 39.9                                                                                      | 39.2 | 38.4 | 37.6 | 36.6 | 34.7                                                                                        | 34.2 | 34.1 | 33.4 | 31.1 | 32.3     | 31.6 | 31.5 | 29.6 | 24.9 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 32.8                                                                                      | 32.3 | 31.7 | 30.8 | 30.1 | 31.6                                                                                        | 30.7 | 30.7 | 30.7 | 29.6 | 28.1     | 27.4 | 27.4 | 27.2 | 24.3 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 27.5                                                                                      | 27.1 | 26.4 | 25.8 | 25.9 | 27.9                                                                                        | 27.5 | 26.9 | 26.2 | 25.6 | 24.9     | 24.5 | 24.4 | 24.3 | 22.4 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 24.0                                                                                      | 24.0 | 23.5 | 23.4 | 23.3 | 23.7                                                                                        | 23.4 | 22.8 | 22.2 | 21.6 | 22.2     | 22.2 | 22.2 | 21.8 | 20.6 | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 21.7                                                                                      | 21.5 | 21.1 | 20.7 | 20.3 | 20.4                                                                                        | 19.9 | 19.4 | 19.0 | 18.5 | 20.1     | 19.9 | 19.5 | 19.0 | 18.5 | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 19.1                                                                                      | 18.9 | 18.4 | 18.2 | 17.7 | 17.5                                                                                        | 17.1 | 16.7 | 16.7 | 16.7 | 17.5     | 17.3 | 16.8 | 16.2 | 15.8 | 104                                                                                 |
| 112                                                                                                                                                                                       |  | 14.7                                                                                      | 14.4 | 14.2 | 14.0 | 13.6 | 15.4                                                                                        | 15.4 | 15.4 | 15.3 | 15.3 | 15.1     | 14.9 | 14.4 | 14.0 | 13.6 | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 14.1                                                                                        | 14.0 | 13.9 | 13.7 | 13.5 | 13.2     | 12.8 | 12.6 | 12.5 | 11.8 | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 12.8                                                                                        | 12.7 | 12.4 | 12.2 | 12.0 | 11.5     | 11.5 | 11.5 | 11.2 | 10.7 | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 10.5     | 10.5 | 10.5 | 10.5 | 9.7  | 136                                                                                 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 9.3      | 9.1  | 9.1  | 8.9  | 8.6  | 144                                                                                 |
| 1)                                                                                                                                                                                        |  | 9.9                                                                                       | 9.9  | 9.9  | 9.9  | 9.9  | 8.8                                                                                         | 8.8  | 8.8  | 8.8  | 8.8  | 6.2      | 6.2  | 6.2  | 6.2  | 6.2  | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|--------------------------------------------------------------------------------------|
|                                                                                                                                                                       |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                      |
| ft                                                                                                                                                                    |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                   |
| 36                                                                                                                                                                    |  | 51.2     | 44.9 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                   |
| 40                                                                                                                                                                    |  | 48.2     | 44.2 | 32.6 | 25.7 | 20.7 | 44.2     | 37.5 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                   |
| 48                                                                                                                                                                    |  | 41.5     | 40.1 | 32.6 | 24.9 | 20.7 | 39.5     | 36.6 | 26.7 | 20.1 | 15.7 | 33.3     | 27.6 | 20.5 | 15.2 | 11.2 | 48                                                                                   |
| 56                                                                                                                                                                    |  | 35.4     | 35.1 | 32.2 | 24.9 | 20.1 | 34.6     | 33.5 | 26.7 | 20.1 | 15.7 | 30.6     | 25.9 | 20.5 | 15.2 | 11.2 | 56                                                                                   |
| 64                                                                                                                                                                    |  | 30.5     | 30.5 | 30.0 | 24.9 | 19.6 | 30.0     | 29.9 | 26.0 | 19.9 | 15.7 | 27.0     | 24.0 | 20.5 | 15.2 | 11.2 | 64                                                                                   |
| 72                                                                                                                                                                    |  | 26.5     | 26.5 | 26.5 | 24.0 | 19.6 | 26.1     | 26.1 | 23.9 | 19.8 | 15.7 | 23.4     | 21.7 | 19.9 | 15.2 | 11.2 | 72                                                                                   |
| 80                                                                                                                                                                    |  | 23.6     | 23.4 | 23.6 | 21.7 | 19.6 | 22.9     | 22.9 | 21.4 | 19.8 | 15.6 | 20.5     | 19.0 | 18.3 | 15.2 | 11.2 | 80                                                                                   |
| 88                                                                                                                                                                    |  | 20.9     | 20.9 | 20.9 | 19.4 | 19.1 | 20.3     | 20.3 | 19.0 | 18.8 | 15.2 | 18.0     | 16.7 | 16.8 | 15.1 | 11.2 | 88                                                                                   |
| 96                                                                                                                                                                    |  | 18.9     | 18.9 | 18.7 | 17.5 | 17.3 | 18.2     | 18.2 | 16.9 | 16.9 | 15.2 | 16.0     | 14.8 | 14.9 | 14.3 | 11.2 | 96                                                                                   |
| 104                                                                                                                                                                   |  | 17.0     | 16.6 | 16.2 | 15.7 | 15.1 | 16.1     | 15.8 | 15.2 | 14.6 | 13.9 | 14.1     | 13.2 | 13.2 | 13.0 | 11.2 | 104                                                                                  |
| 112                                                                                                                                                                   |  | 14.6     | 14.4 | 13.8 | 13.3 | 12.9 | 13.8     | 13.5 | 12.9 | 12.5 | 12.5 | 12.7     | 11.8 | 11.6 | 11.6 | 11.2 | 112                                                                                  |
| 120                                                                                                                                                                   |  | 12.6     | 12.3 | 11.9 | 11.5 | 11.1 | 12.1     | 12.1 | 11.2 | 11.2 | 11.1 | 11.1     | 10.5 | 10.3 | 10.3 | 10.0 | 120                                                                                  |
| 128                                                                                                                                                                   |  | 10.8     | 10.6 | 10.2 | 9.9  | 9.5  | 10.9     | 10.8 | 10.1 | 9.9  | 9.5  | 9.9      | 9.3  | 9.1  | 8.8  | 8.4  | 128                                                                                  |
| 136                                                                                                                                                                   |  | 9.3      | 9.1  | 8.9  | 8.5  | 8.2  | 9.4      | 9.2  | 8.9  | 8.5  | 8.2  | 8.5      | 8.2  | 7.8  | 7.4  | 6.9  | 136                                                                                  |
| 144                                                                                                                                                                   |  | 8.0      | 8.0  | 8.0  | 7.5  | 7.5  | 8.2      | 8.0  | 7.6  | 7.3  | 6.9  | 7.1      | 6.9  | 6.5  | 6.2  | 5.8  | 144                                                                                  |
| 152                                                                                                                                                                   |  | 6.9      | 6.7  | 6.5  | 6.3  | 6.1  | 6.9      | 6.7  | 6.5  | 6.2  | 5.8  | 6.0      | 5.8  | 5.4  | 5.1  | 4.7  | 152                                                                                  |
| 160                                                                                                                                                                   |  | -        | -    | -    | -    | -    | 5.9      | 5.8  | 5.5  | 5.3  | 5.0  | 5.0      | 4.7  | 4.5  | 4.2  | 3.9  | 160                                                                                  |
| 168                                                                                                                                                                   |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 4.0      | 3.9  | 3.6  | 3.4  | 3.2  | 168                                                                                  |
| 176                                                                                                                                                                   |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 3.2      | 3.2  | 3.0  | 2.7  | 2.5  | 176                                                                                  |
| 1)                                                                                                                                                                    |  | 3.7      | 3.7  | 3.7  | 3.7  | 3.7  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                   |

1) Capacities with horizontal boom

## HA

|  55,100 lb +  33,100 lb |                                                                                   |  19.7 ft |        |  32.2 ft/s |       | 360°  |         | ASME B30.5 |       |       |       |         |       |       |       |       |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------|-------|-------|---------|------------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|                                                                                                          |  | 42.3 ft                                                                                   |        |                                                                                             |       |       | 56.1 ft |            |       |       |       | 70.2 ft |       |       |       |       |  |
|                                                                                                                                                                                           |                                                                                   | 0,3°                                                                                      | 1°     | 2°                                                                                          | 3°    | 4°    | 0,3°    | 1°         | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |        |                                                                                             |       |       |         |            |       |       |       |         |       |       |       |       | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 331.0**                                                                                   | 304.6* | 218.9                                                                                       | 163.5 | 127.9 | 327.9** | 271.6      | 199.6 | 152.7 | 121.1 | 286.6   | 241.0 | 181.5 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 294.8*                                                                                    | 290.7* | 212.8                                                                                       | 159.5 | 125.2 | 294.0*  | 263.6      | 194.5 | 149.3 | 118.6 | 271.8   | 233.9 | 177.3 | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 264.9                                                                                     | 263.8  | 207.0                                                                                       | 155.9 | 122.6 | 264.9   | 256.1      | 189.7 | 146.1 | 116.3 | 253.0   | 222.1 | 173.3 | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 239.7                                                                                     | 238.6  | 201.3                                                                                       | 152.2 | 120.2 | 238.8   | 237.7      | 185.0 | 142.8 | 114.2 | 234.2   | 214.5 | 168.8 | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 214.5                                                                                     | 213.5  | 195.7                                                                                       | 148.7 | 117.8 | 213.7   | 212.4      | 180.6 | 139.9 | 112.0 | 207.1   | 197.2 | 165.0 | 130.2 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 190.2                                                                                     | 189.4  | 188.1                                                                                       | 145.2 | 115.3 | 191.3   | 190.2      | 175.4 | 137.1 | 109.9 | 183.0   | 182.8 | 160.6 | 127.7 | 103.7 | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 154.6                                                                                     | 153.8  | 152.5                                                                                       | 137.4 | 110.1 | 155.8   | 154.8      | 153.3 | 131.5 | 106.0 | 145.7   | 144.1 | 141.3 | 122.9 | 99.8  | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 122.7                                                                                     | 121.7  | 120.2                                                                                       | 118.5 | 104.3 | 124.0   | 123.5      | 122.5 | 118.4 | 102.1 | 119.6   | 118.9 | 117.8 | 114.0 | 96.5  | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 96.9                                                                                      | 96.2   | 95.0                                                                                        | 93.8  | 88.3  | 99.8    | 98.9       | 97.5  | 96.1  | 92.9  | 100.1   | 99.0  | 97.3  | 95.7  | 91.3  | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | -                                                                                         | -      | -                                                                                           | -     | -     | 83.2    | 82.5       | 81.3  | 80.2  | 79.0  | 83.6    | 82.7  | 81.3  | 80.0  | 78.6  | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | -                                                                                         | -      | -                                                                                           | -     | -     | 70.8    | 70.2       | 69.3  | 68.4  | 67.4  | 71.9    | 71.2  | 70.2  | 69.1  | 68.0  | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                         | -      | -                                                                                           | -     | -     | -       | -          | -     | -     | -     | 54.3    | 53.7  | 52.9  | 52.1  | 51.3  | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                         | -      | -                                                                                           | -     | -     | -       | -          | -     | -     | -     | 42.6    | 42.2  | 41.6  | 41.1  | 40.4  | 56                                                                                  |
| 1)                                                                                                                                                                                        |                                                                                   | 48.1                                                                                      | 48.1   | 48.1                                                                                        | 48.1  | 48.1  | 35.1    | 35.1       | 35.1  | 35.1  | 35.1  | 26.9    | 26.9  | 26.9  | 26.9  | 26.9  | 1)                                                                                  |

|  |  | 84.0 ft  |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |       |      |      |      |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------|-------|-------|------|---------|-------|-------|------|------|----------|-------|------|------|------|-------------------------------------------------------------------------------------|
|                                                                                   |                                                                                   | 0,3°     | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°    | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                |                                                                                   | 1,000 lb |       |       |       |      |         |       |       |      |      |          |       |      |      |      | ft                                                                                  |
| 12                                                                                |                                                                                   | 231.7    | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 12                                                                                  |
| 14                                                                                |                                                                                   | 220.3    | 192.7 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 14                                                                                  |
| 16                                                                                |                                                                                   | 208.6    | 184.8 | 145.9 | 115.3 | -    | 181.9   | -     | -     | -    | -    | -        | -     | -    | -    | -    | 16                                                                                  |
| 18                                                                                |                                                                                   | 188.6    | 174.6 | 145.9 | 115.3 | 95.0 | 170.8   | 143.7 | 114.4 | -    | -    | -        | -     | -    | -    | -    | 18                                                                                  |
| 20                                                                                |                                                                                   | 167.0    | 164.7 | 145.5 | 115.3 | 95.0 | 158.1   | 142.5 | 114.4 | 91.1 | 74.5 | 137.7    | 115.5 | 84.7 | -    | -    | 20                                                                                  |
| 24                                                                                |                                                                                   | 138.8    | 137.1 | 134.4 | 114.0 | 93.7 | 127.0   | 125.4 | 113.5 | 91.1 | 74.5 | 122.3    | 113.1 | 84.7 | 66.8 | 55.5 | 24                                                                                  |
| 28                                                                                |                                                                                   | 114.1    | 112.6 | 110.3 | 105.8 | 91.4 | 110.7   | 109.1 | 105.3 | 91.1 | 74.5 | 101.9    | 100.3 | 84.7 | 66.8 | 54.5 | 28                                                                                  |
| 32                                                                                |                                                                                   | 96.9     | 96.7  | 96.2  | 94.2  | 88.8 | 93.9    | 92.5  | 90.7  | 87.2 | 74.5 | 86.8     | 85.2  | 81.5 | 66.8 | 54.0 | 32                                                                                  |
| 36                                                                                |                                                                                   | 84.4     | 84.0  | 83.0  | 81.4  | 78.7 | 81.6    | 80.5  | 78.9  | 77.4 | 70.8 | 75.6     | 74.3  | 72.5 | 64.8 | 54.0 | 36                                                                                  |
| 40                                                                                |                                                                                   | 71.7     | 71.0  | 69.7  | 68.4  | 67.3 | 70.4    | 69.5  | 68.2  | 66.9 | 65.4 | 65.6     | 64.5  | 63.0 | 61.5 | 53.6 | 40                                                                                  |
| 48                                                                                |                                                                                   | 53.9     | 53.3  | 52.4  | 51.6  | 50.6 | 52.8    | 52.0  | 51.1  | 50.1 | 48.9 | 51.9     | 51.4  | 51.3 | 50.4 | 47.2 | 48                                                                                  |
| 56                                                                                |                                                                                   | 42.3     | 41.8  | 41.1  | 40.4  | 39.6 | 42.1    | 41.8  | 41.4  | 40.9 | 40.6 | 42.7     | 42.1  | 41.3 | 40.4 | 39.4 | 56                                                                                  |
| 64                                                                                |                                                                                   | 34.1     | 33.7  | 33.2  | 32.9  | 32.9 | 35.5    | 35.0  | 34.5  | 33.8 | 33.2 | 34.4     | 33.9  | 33.2 | 32.5 | 31.8 | 64                                                                                  |
| 72                                                                                |                                                                                   | 29.8     | 29.4  | 29.2  | 28.8  | 28.3 | 29.2    | 29.0  | 28.6  | 27.9 | 27.5 | 28.1     | 27.7  | 27.2 | 26.6 | 25.9 | 72                                                                                  |
| 80                                                                                |                                                                                   | -        | -     | -     | -     | -    | 24.8    | 24.5  | 24.1  | 23.7 | 23.3 | 23.7     | 23.7  | 23.3 | 23.2 | 23.1 | 80                                                                                  |
| 88                                                                                |                                                                                   | -        | -     | -     | -     | -    | 17.0    | 17.0  | 16.5  | 16.5 | 16.5 | 21.3     | 21.2  | 20.7 | 20.4 | 19.9 | 88                                                                                  |
| 96                                                                                |                                                                                   | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 18.5     | 18.2  | 17.9 | 17.6 | 17.3 | 96                                                                                  |
| 104                                                                               |                                                                                   | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 16.0     | 15.8  | 15.6 | 15.4 | 15.0 | 104                                                                                 |
| 1)                                                                                |                                                                                   | 20.9     | 20.9  | 20.9  | 20.9  | 20.9 | 16.8    | 16.8  | 16.8  | 16.8 | 16.8 | 13.0     | 13.0  | 13.0 | 13.0 | 13.0 | 1)                                                                                  |

\* Heavy lift sheave required

\*\* Heavy lift sheave and 7 sheaves hook block required

1) Capacities with horizontal boom



## HA

|  55,100 lb +  33,100 lb |  |  19.7 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                        |  | 91.7                                                                                      | 83.8 | 67.5 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 81.2                                                                                      | 79.0 | 67.0 | 52.9 | 42.8 | 74.8                                                                                        | 67.9 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 73.4                                                                                      | 72.4 | 65.4 | 52.9 | 42.8 | 67.0                                                                                        | 65.2 | 50.7 | 41.0 | -    | 62.9     | 54.8 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 68.5                                                                                      | 68.0 | 63.3 | 52.9 | 42.8 | 60.8                                                                                        | 60.3 | 50.7 | 40.1 | 33.3 | 57.3     | 52.6 | 40.3 | 32.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 63.5                                                                                      | 63.4 | 60.7 | 52.8 | 42.8 | 55.1                                                                                        | 55.1 | 50.3 | 39.1 | 33.3 | 52.0     | 50.1 | 40.1 | 32.0 | 26.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 51.8                                                                                      | 51.0 | 49.8 | 48.5 | 42.3 | 46.3                                                                                        | 45.9 | 44.1 | 38.7 | 33.2 | 43.8     | 42.8 | 39.5 | 31.7 | 25.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 41.0                                                                                      | 40.3 | 39.3 | 38.3 | 37.3 | 38.8                                                                                        | 37.9 | 37.7 | 35.4 | 32.3 | 36.8     | 36.0 | 35.0 | 31.0 | 25.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 32.8                                                                                      | 32.1 | 31.4 | 31.1 | 30.7 | 33.1                                                                                        | 32.3 | 31.8 | 30.8 | 29.4 | 31.2     | 30.5 | 30.2 | 29.1 | 24.9 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 28.7                                                                                      | 28.3 | 27.6 | 27.0 | 26.3 | 27.0                                                                                        | 26.6 | 25.9 | 25.0 | 24.8 | 27.0     | 26.7 | 25.9 | 25.2 | 23.8 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 24.1                                                                                      | 23.7 | 23.2 | 22.6 | 22.1 | 22.5                                                                                        | 22.1 | 22.1 | 22.0 | 21.9 | 22.7     | 22.3 | 21.5 | 21.1 | 20.2 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 20.5                                                                                      | 20.1 | 19.6 | 19.2 | 18.6 | 19.9                                                                                        | 19.8 | 19.6 | 19.1 | 18.5 | 19.0     | 18.9 | 18.6 | 18.2 | 17.4 | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 17.4                                                                                      | 17.1 | 16.7 | 16.4 | 16.4 | 17.3                                                                                        | 17.1 | 16.7 | 16.2 | 15.7 | 16.6     | 16.5 | 15.9 | 15.9 | 15.0 | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 15.2                                                                                      | 14.9 | 14.9 | 14.7 | 14.4 | 14.8                                                                                        | 14.6 | 14.2 | 13.9 | 13.5 | 14.5     | 14.5 | 14.3 | 13.9 | 13.4 | 104                                                                                 |
| 112                                                                                                                                                                                       |  | 10.9                                                                                      | 10.7 | 10.5 | 10.3 | 9.9  | 12.9                                                                                        | 12.7 | 12.3 | 11.8 | 11.6 | 12.9     | 12.7 | 12.3 | 12.0 | 11.6 | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 11.1                                                                                        | 10.9 | 10.8 | 10.8 | 10.2 | 11.1     | 10.9 | 10.6 | 10.4 | 10.0 | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 9.6                                                                                         | 9.5  | 9.3  | 9.0  | 8.8  | 9.7      | 9.6  | 9.3  | 8.9  | 8.7  | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 8.4      | 8.2  | 8.0  | 7.9  | 7.7  | 136                                                                                 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 6.4      | 6.4  | 6.2  | 6.0  | 5.8  | 144                                                                                 |
| 1)                                                                                                                                                                                        |  | 9.9                                                                                       | 9.9  | 9.9  | 9.9  | 9.9  | 8.8                                                                                         | 8.8  | 8.8  | 8.8  | 8.8  | 6.2      | 6.2  | 6.2  | 6.2  | 6.2  | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|--------------------------------------------------------------------------------------|
|                                                                                                                                                                       |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                      |
| ft                                                                                                                                                                    |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                   |
| 36                                                                                                                                                                    |  | 51.2     | 44.9 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                   |
| 40                                                                                                                                                                    |  | 48.2     | 44.2 | 32.6 | 25.7 | 20.7 | 44.2     | 37.5 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                   |
| 48                                                                                                                                                                    |  | 41.5     | 40.1 | 32.6 | 24.9 | 20.7 | 39.5     | 36.6 | 26.7 | 20.1 | 15.7 | 33.3     | 27.6 | 20.5 | 15.2 | 11.2 | 48                                                                                   |
| 56                                                                                                                                                                    |  | 35.4     | 35.1 | 32.2 | 24.9 | 20.1 | 34.6     | 33.5 | 26.7 | 20.1 | 15.7 | 30.6     | 25.9 | 20.5 | 15.2 | 11.2 | 56                                                                                   |
| 64                                                                                                                                                                    |  | 30.3     | 29.8 | 28.8 | 24.9 | 19.6 | 30.0     | 29.7 | 26.0 | 19.9 | 15.7 | 27.0     | 24.0 | 20.5 | 15.2 | 11.2 | 64                                                                                   |
| 72                                                                                                                                                                    |  | 25.9     | 25.9 | 25.2 | 23.4 | 19.6 | 25.7     | 25.0 | 23.9 | 19.8 | 15.7 | 23.4     | 21.7 | 19.9 | 15.2 | 11.2 | 72                                                                                   |
| 80                                                                                                                                                                    |  | 22.1     | 21.7 | 21.0 | 20.2 | 19.1 | 21.2     | 20.8 | 19.9 | 19.1 | 15.6 | 20.5     | 19.0 | 18.3 | 15.2 | 11.2 | 80                                                                                   |
| 88                                                                                                                                                                    |  | 18.5     | 18.1 | 17.4 | 16.8 | 16.1 | 18.1     | 17.8 | 16.9 | 16.3 | 15.2 | 17.7     | 16.7 | 16.3 | 14.8 | 11.2 | 88                                                                                   |
| 96                                                                                                                                                                    |  | 15.6     | 15.1 | 14.9 | 14.0 | 13.9 | 15.6     | 15.1 | 14.6 | 14.0 | 13.4 | 14.7     | 14.3 | 13.5 | 12.9 | 11.2 | 96                                                                                   |
| 104                                                                                                                                                                   |  | 13.4     | 13.4 | 13.2 | 12.5 | 12.3 | 13.1     | 12.8 | 12.2 | 11.7 | 11.1 | 12.2     | 11.8 | 11.1 | 10.6 | 9.9  | 104                                                                                  |
| 112                                                                                                                                                                   |  | 12.0     | 11.8 | 11.4 | 10.9 | 10.5 | 11.1     | 10.7 | 10.3 | 9.8  | 9.2  | 10.0     | 9.6  | 9.2  | 8.5  | 8.1  | 112                                                                                  |
| 120                                                                                                                                                                   |  | 10.4     | 10.2 | 9.8  | 9.4  | 8.9  | 9.3      | 8.9  | 8.5  | 8.1  | 7.6  | 8.3      | 8.0  | 7.6  | 7.0  | 6.5  | 120                                                                                  |
| 128                                                                                                                                                                   |  | 8.9      | 8.7  | 8.3  | 8.0  | 7.6  | 7.8      | 7.5  | 7.2  | 6.7  | 6.3  | 6.8      | 6.5  | 6.1  | 5.6  | 5.2  | 128                                                                                  |
| 136                                                                                                                                                                   |  | 7.6      | 7.4  | 7.1  | 6.9  | 6.4  | 6.5      | 6.2  | 5.8  | 5.5  | 5.1  | 5.5      | 5.2  | 4.9  | 4.4  | 4.0  | 136                                                                                  |
| 144                                                                                                                                                                   |  | 6.4      | 6.2  | 6.0  | 5.8  | 5.5  | 5.3      | 5.1  | 4.7  | 4.5  | 4.2  | 4.2      | 4.0  | 3.8  | 3.4  | 2.9  | 144                                                                                  |
| 152                                                                                                                                                                   |  | 4.3      | 4.1  | 3.9  | 3.6  | 3.4  | 4.3      | 4.1  | 3.9  | 3.6  | 3.2  | 3.4      | 3.2  | 2.8  | -    | -    | 152                                                                                  |
| 160                                                                                                                                                                   |  | -        | -    | -    | -    | -    | 3.5      | 3.3  | 3.1  | 2.8  | 2.6  | -        | -    | -    | -    | -    | 160                                                                                  |
| 1)                                                                                                                                                                    |  | 3.7      | 3.7  | 3.7  | 3.7  | 3.7  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                   |

1) Capacities with horizontal boom

## HA

| 33,100 lb +  33,100 lb                                                             |  |  19.7 ft |        |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|   |  | 42.3 ft                                                                                   |        |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                  |  | 0,3°                                                                                      | 1°     | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |                                                                                           |        |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 10                                                                                                                                                                  |  | 324.5**                                                                                   | 304.5* | 218.9 | 163.5 | 127.9 | 324.4**                                                                                     | 271.6 | 199.6 | 152.7 | 121.1 | 286.6   | 241.0 | 181.5 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                  |  | 289.6                                                                                     | 288.5  | 212.8 | 159.5 | 125.2 | 288.5                                                                                       | 263.6 | 194.5 | 149.3 | 118.6 | 271.8   | 233.9 | 177.3 | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                  |  | 258.7                                                                                     | 257.6  | 207.0 | 155.9 | 122.6 | 257.6                                                                                       | 251.4 | 189.7 | 146.1 | 116.3 | 243.6   | 222.1 | 173.3 | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                  |  | 227.0                                                                                     | 226.0  | 201.3 | 152.2 | 120.2 | 226.2                                                                                       | 224.9 | 185.0 | 142.8 | 114.2 | 208.1   | 205.3 | 168.8 | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                  |  | 201.2                                                                                     | 200.3  | 189.8 | 148.7 | 117.8 | 198.9                                                                                       | 197.2 | 177.1 | 139.9 | 112.0 | 181.6   | 179.1 | 160.5 | 130.2 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                  |  | 177.5                                                                                     | 176.6  | 175.4 | 145.2 | 115.3 | 171.5                                                                                       | 169.3 | 166.5 | 137.1 | 109.9 | 154.9   | 152.8 | 149.7 | 127.7 | 103.7 | 20                                                                                  |
| 24                                                                                                                                                                  |  | 136.1                                                                                     | 134.9  | 133.0 | 130.3 | 110.1 | 134.4                                                                                       | 133.0 | 130.7 | 126.4 | 106.0 | 125.0   | 123.6 | 121.2 | 118.0 | 99.8  | 24                                                                                  |
| 28                                                                                                                                                                  |  | 101.5                                                                                     | 100.7  | 99.3  | 97.8  | 96.1  | 105.2                                                                                       | 104.0 | 102.3 | 100.7 | 96.0  | 101.6   | 100.3 | 98.3  | 97.0  | 94.3  | 28                                                                                  |
| 32                                                                                                                                                                  |  | 79.6                                                                                      | 79.0   | 78.0  | 77.0  | 75.8  | 82.8                                                                                        | 81.9  | 80.7  | 79.9  | 78.9  | 85.1    | 84.4  | 83.3  | 82.1  | 80.6  | 32                                                                                  |
| 36                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | 70.4                                                                                        | 69.6  | 68.7  | 67.7  | 66.6  | 71.6    | 70.8  | 69.7  | 68.5  | 67.4  | 36                                                                                  |
| 40                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | 58.3                                                                                        | 57.6  | 57.0  | 56.1  | 55.2  | 59.3    | 58.7  | 57.8  | 56.8  | 55.9  | 40                                                                                  |
| 48                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 44.3    | 43.9  | 43.1  | 42.4  | 41.6  | 48                                                                                  |
| 56                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 34.6    | 34.4  | 34.2  | 33.8  | 33.5  | 56                                                                                  |
| 1)                                                                                                                                                                  |  | 48.1                                                                                      | 48.1   | 48.1  | 48.1  | 48.1  | 35.1                                                                                        | 35.1  | 35.1  | 35.1  | 35.1  | 26.9    | 26.9  | 26.9  | 26.9  | 26.9  | 1)                                                                                  |

|   |  | 84.0 ft |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |       |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|-------|-------|-------|------|---------|-------|-------|------|------|----------|-------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°    | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°    | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |         |       |       |       |      |         |       |       |      |      |          |       |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 231.7   | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 215.1   | 192.7 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 188.6   | 184.8 | 145.9 | 115.3 | -    | 172.0   | -     | -     | -    | -    | -        | -     | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 167.6   | 165.0 | 144.6 | 115.3 | 95.0 | 150.9   | 139.1 | 114.4 | -    | -    | -        | -     | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 145.8   | 143.6 | 140.6 | 115.2 | 95.0 | 135.6   | 134.2 | 114.2 | 91.1 | 74.5 | 125.2    | 114.4 | 84.7 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 116.4   | 116.0 | 113.4 | 108.6 | 93.7 | 111.1   | 109.4 | 107.0 | 91.1 | 74.5 | 101.3    | 99.4  | 84.7 | 66.8 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 98.8    | 97.5  | 95.6  | 93.7  | 88.6 | 91.8    | 90.4  | 88.3  | 85.3 | 74.5 | 83.9     | 82.4  | 79.4 | 66.8 | 54.5 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 83.1    | 82.0  | 80.4  | 78.8  | 77.2 | 77.4    | 76.2  | 74.4  | 72.6 | 70.0 | 71.0     | 69.7  | 67.8 | 64.3 | 54.0 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 70.6    | 69.7  | 68.4  | 66.9  | 65.6 | 67.1    | 66.1  | 64.5  | 62.9 | 61.5 | 64.1     | 63.3  | 61.4 | 57.9 | 52.1 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 59.1    | 58.5  | 57.4  | 56.1  | 55.0 | 57.8    | 56.9  | 55.5  | 54.2 | 52.8 | 57.6     | 56.7  | 55.4 | 54.1 | 50.2 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 44.0    | 43.4  | 42.6  | 41.8  | 41.6 | 45.7    | 45.1  | 44.3  | 43.3 | 42.4 | 44.5     | 43.8  | 42.8 | 41.8 | 40.7 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 35.8    | 35.6  | 35.0  | 34.4  | 33.8 | 35.6    | 35.1  | 34.4  | 33.7 | 33.0 | 34.5     | 33.9  | 33.1 | 32.3 | 31.7 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 29.2    | 28.8  | 28.4  | 27.9  | 27.2 | 28.6    | 28.1  | 27.5  | 27.0 | 26.3 | 28.6     | 28.3  | 27.7 | 27.2 | 26.8 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 23.9    | 23.7  | 23.3  | 22.8  | 22.6 | 23.3    | 23.2  | 23.2  | 22.8 | 22.3 | 23.7     | 23.3  | 22.8 | 22.4 | 21.9 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 20.2    | 20.0  | 19.6  | 19.2 | 18.9 | 20.0     | 19.6  | 19.1 | 18.7 | 18.3 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 16.8    | 16.8  | 16.3  | 16.3 | 16.2 | 16.7     | 16.5  | 16.1 | 15.7 | 15.4 | 88                                                                                  |
| 96                                                                                                                                                                  |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 14.2     | 14.0  | 13.7 | 13.4 | 13.0 | 96                                                                                  |
| 104                                                                                                                                                                 |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 12.1     | 11.9  | 11.7 | 11.5 | 11.2 | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 20.9    | 20.9  | 20.9  | 20.9  | 20.9 | 16.5    | 16.3  | 16.3  | 16.1 | 15.7 | 12.3     | 12.1  | 11.9 | 11.7 | 11.7 | 1)                                                                                  |

\* Heavy lift sheave required

\*\* Heavy lift sheave and 7 sheaves hook block required

1) Capacities with horizontal boom





## HA

|  33,100 lb +  33,100 lb |                                                                                   |  19.7 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|--|
|                                                                                                          |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |  |
|                                                                                                                                                                                           |                                                                                   | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |  |
| 24                                                                                                                                                                                        |                                                                                   | 91.5                                                                                      | 83.8 | 67.5 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |  |
| 28                                                                                                                                                                                        |                                                                                   | 79.1                                                                                      | 76.7 | 67.0 | 52.9 | 42.8 | 73.9                                                                                        | 67.9 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |  |
| 32                                                                                                                                                                                        |                                                                                   | 70.1                                                                                      | 68.7 | 65.2 | 52.9 | 42.8 | 63.4                                                                                        | 61.7 | 50.7 | 41.0 | -    | 60.9     | 54.8 | -    | -    | -    | 32                                                                                  |  |
| 36                                                                                                                                                                                        |                                                                                   | 61.1                                                                                      | 60.0 | 58.4 | 51.5 | 42.8 | 55.9                                                                                        | 54.9 | 48.8 | 40.1 | 33.3 | 53.2     | 50.2 | 40.3 | 32.0 | -    | 36                                                                                  |  |
| 40                                                                                                                                                                                        |                                                                                   | 53.1                                                                                      | 52.2 | 50.7 | 49.2 | 42.5 | 49.8                                                                                        | 48.1 | 46.3 | 39.1 | 33.3 | 47.9     | 46.8 | 39.9 | 32.0 | 26.0 | 40                                                                                  |  |
| 48                                                                                                                                                                                        |                                                                                   | 41.8                                                                                      | 41.0 | 39.8 | 38.6 | 37.3 | 41.1                                                                                        | 40.2 | 38.9 | 36.2 | 32.9 | 38.7     | 38.4 | 36.2 | 31.7 | 25.9 | 48                                                                                  |  |
| 56                                                                                                                                                                                        |                                                                                   | 34.6                                                                                      | 34.3 | 33.6 | 32.7 | 31.2 | 33.0                                                                                        | 32.3 | 31.6 | 31.0 | 29.3 | 32.4     | 31.8 | 31.3 | 29.6 | 25.6 | 56                                                                                  |  |
| 64                                                                                                                                                                                        |                                                                                   | 28.0                                                                                      | 27.5 | 26.8 | 26.1 | 25.6 | 27.5                                                                                        | 27.2 | 26.7 | 25.9 | 25.1 | 26.9     | 26.4 | 25.8 | 24.9 | 23.4 | 64                                                                                  |  |
| 72                                                                                                                                                                                        |                                                                                   | 23.0                                                                                      | 22.6 | 22.3 | 21.7 | 21.3 | 22.8                                                                                        | 22.4 | 21.7 | 21.0 | 20.4 | 22.1     | 21.9 | 21.7 | 21.0 | 19.3 | 72                                                                                  |  |
| 80                                                                                                                                                                                        |                                                                                   | 19.3                                                                                      | 19.1 | 18.7 | 18.1 | 17.6 | 18.9                                                                                        | 18.5 | 17.8 | 17.7 | 16.7 | 18.9     | 18.5 | 18.0 | 17.3 | 16.7 | 80                                                                                  |  |
| 88                                                                                                                                                                                        |                                                                                   | 16.3                                                                                      | 16.0 | 15.6 | 15.2 | 14.7 | 16.0                                                                                        | 15.9 | 15.7 | 15.4 | 14.8 | 15.8     | 15.4 | 15.0 | 14.4 | 13.9 | 88                                                                                  |  |
| 96                                                                                                                                                                                        |                                                                                   | 13.7                                                                                      | 13.4 | 13.1 | 12.8 | 12.3 | 14.0                                                                                        | 13.7 | 13.3 | 13.0 | 12.6 | 13.2     | 12.9 | 12.4 | 12.0 | 11.6 | 96                                                                                  |  |
| 104                                                                                                                                                                                       |                                                                                   | 11.7                                                                                      | 11.5 | 11.0 | 10.8 | 10.6 | 11.9                                                                                        | 11.7 | 11.3 | 11.0 | 10.6 | 11.1     | 10.8 | 10.4 | 9.9  | 9.7  | 104                                                                                 |  |
| 112                                                                                                                                                                                       |                                                                                   | 7.4                                                                                       | 7.2  | 7.0  | 6.6  | 6.3  | 10.0                                                                                        | 9.8  | 9.6  | 9.4  | 9.0  | 9.4      | 9.0  | 8.7  | 8.3  | 8.1  | 112                                                                                 |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -    | -    | -    | 8.6                                                                                         | 8.5  | 8.3  | 7.9  | 7.7  | 7.8      | 7.6  | 7.2  | 7.0  | 6.7  | 120                                                                                 |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -    | -    | -    | 6.4                                                                                         | 6.4  | 6.2  | 5.9  | 5.7  | 6.5      | 6.4  | 6.2  | 5.9  | 5.6  | 128                                                                                 |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 5.5      | 5.3  | 5.1  | 4.9  | 4.8  | 136                                                                                 |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 3.8      | 3.6  | 3.3  | 3.3  | 3.1  | 144                                                                                 |  |
| 1)                                                                                                                                                                                        |                                                                                   | 9.0                                                                                       | 8.8  | 8.8  | 8.6  | 8.4  | 7.7                                                                                         | 7.5  | 7.5  | 7.3  | 7.1  | 5.1      | 4.9  | 4.9  | 4.6  | 4.6  | 1)                                                                                  |  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|--------------------------------------------------------------------------------------|
| ft                                                                                                                                                                    |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                   |
| 1,000 lb                                                                                                                                                              |  |          |      |      |      |      |          |      |      |      |      |          |      |      |      |      |                                                                                      |
| 36                                                                                                                                                                    |  | 50.0     | 44.9 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                   |
| 40                                                                                                                                                                    |  | 45.5     | 43.8 | 32.6 | 25.7 | 20.7 | 43.9     | 37.4 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                   |
| 48                                                                                                                                                                    |  | 38.0     | 37.0 | 32.3 | 24.9 | 20.7 | 35.8     | 34.7 | 26.7 | 20.1 | 15.7 | 32.8     | 27.6 | 20.5 | 15.2 | 11.2 | 48                                                                                   |
| 56                                                                                                                                                                    |  | 30.8     | 29.9 | 28.8 | 24.9 | 20.1 | 29.7     | 28.7 | 25.5 | 20.1 | 15.7 | 27.8     | 25.7 | 20.5 | 15.2 | 11.2 | 56                                                                                   |
| 64                                                                                                                                                                    |  | 25.3     | 24.6 | 24.1 | 22.4 | 19.6 | 24.8     | 24.1 | 22.4 | 19.9 | 15.7 | 22.7     | 21.9 | 20.0 | 15.2 | 11.2 | 64                                                                                   |
| 72                                                                                                                                                                    |  | 21.5     | 21.5 | 20.8 | 19.2 | 17.7 | 20.6     | 19.9 | 19.0 | 17.9 | 15.7 | 18.6     | 17.9 | 16.8 | 15.2 | 11.2 | 72                                                                                   |
| 80                                                                                                                                                                    |  | 18.2     | 17.6 | 17.0 | 16.3 | 15.6 | 16.9     | 16.5 | 15.6 | 15.0 | 14.1 | 15.4     | 14.8 | 13.9 | 13.0 | 11.1 | 80                                                                                   |
| 88                                                                                                                                                                    |  | 15.0     | 14.5 | 14.1 | 13.4 | 12.9 | 13.9     | 13.4 | 12.8 | 12.1 | 11.3 | 12.6     | 12.2 | 11.3 | 10.5 | 9.6  | 88                                                                                   |
| 96                                                                                                                                                                    |  | 12.4     | 12.1 | 11.5 | 11.0 | 10.6 | 11.3     | 10.9 | 10.4 | 9.7  | 9.2  | 10.2     | 9.8  | 9.2  | 8.4  | 7.6  | 96                                                                                   |
| 104                                                                                                                                                                   |  | 10.2     | 10.0 | 9.5  | 9.1  | 8.6  | 9.1      | 8.8  | 8.2  | 7.7  | 7.3  | 8.2      | 7.7  | 7.3  | 6.6  | 5.9  | 104                                                                                  |
| 112                                                                                                                                                                   |  | 8.5      | 8.3  | 7.8  | 7.4  | 7.0  | 7.4      | 7.0  | 6.5  | 6.1  | 5.7  | 6.3      | 6.1  | 5.4  | 5.0  | 4.6  | 112                                                                                  |
| 120                                                                                                                                                                   |  | 7.0      | 6.7  | 6.4  | 6.1  | 5.7  | 5.9      | 5.6  | 5.2  | 4.8  | 4.4  | 5.0      | 4.5  | 4.1  | 3.7  | 3.2  | 120                                                                                  |
| 128                                                                                                                                                                   |  | 5.7      | 5.5  | 5.2  | 4.8  | 4.6  | 4.6      | 4.4  | 4.0  | 3.5  | 3.3  | 3.6      | 3.3  | 2.9  | -    | -    | 128                                                                                  |
| 136                                                                                                                                                                   |  | 4.7      | 4.4  | 4.1  | 3.9  | 3.5  | 3.5      | 3.3  | 2.9  | 2.6  | -    | 2.4      | -    | -    | -    | -    | 136                                                                                  |
| 144                                                                                                                                                                   |  | 3.6      | 3.6  | 3.1  | 2.9  | 2.7  | 2.5      | 2.3  | -    | -    | -    | -        | -    | -    | -    | -    | 144                                                                                  |
| 1)                                                                                                                                                                    |  | 2.4      | 2.4  | 2.2  | 2.2  | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                   |

1) Capacities with horizontal boom





## HA

| 11,000 lb +  33,100 lb                                                             |  |  19.7 ft |        |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|   |  | 42.3 ft                                                                                   |        |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                  |  | 0,3°                                                                                      | 1°     | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |                                                                                           |        |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 10                                                                                                                                                                  |  | 319.0**                                                                                   | 304.0* | 218.9 | 163.5 | 127.9 | 317.9*                                                                                      | 271.6 | 199.6 | 152.7 | 121.1 | 286.0   | 241.0 | 181.5 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                  |  | 282.4                                                                                     | 281.3  | 212.8 | 159.5 | 125.2 | 281.3                                                                                       | 263.6 | 194.5 | 149.3 | 118.6 | 254.0   | 233.5 | 177.3 | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                  |  | 244.8                                                                                     | 243.7  | 207.0 | 155.9 | 122.6 | 236.7                                                                                       | 234.6 | 189.7 | 146.1 | 116.3 | 209.4   | 206.2 | 173.3 | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                  |  | 211.8                                                                                     | 210.8  | 201.3 | 152.2 | 120.2 | 194.5                                                                                       | 192.0 | 181.8 | 142.8 | 114.2 | 172.6   | 170.9 | 165.8 | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                  |  | 180.8                                                                                     | 179.5  | 175.9 | 148.7 | 117.8 | 163.9                                                                                       | 162.4 | 158.9 | 139.3 | 112.0 | 150.9   | 148.8 | 145.6 | 128.1 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                  |  | 151.0                                                                                     | 149.3  | 146.7 | 142.5 | 115.2 | 140.5                                                                                       | 138.8 | 136.2 | 133.6 | 109.9 | 128.5   | 126.8 | 124.0 | 121.4 | 103.7 | 20                                                                                  |
| 24                                                                                                                                                                  |  | 108.7                                                                                     | 107.6  | 105.9 | 104.0 | 102.2 | 107.7                                                                                       | 106.5 | 104.5 | 102.4 | 100.4 | 103.9   | 102.6 | 100.5 | 98.4  | 95.7  | 24                                                                                  |
| 28                                                                                                                                                                  |  | 80.4                                                                                      | 79.5   | 78.3  | 77.0  | 75.7  | 84.7                                                                                        | 84.2  | 83.5  | 82.1  | 80.6  | 84.3    | 83.1  | 81.5  | 79.8  | 78.1  | 28                                                                                  |
| 32                                                                                                                                                                  |  | 62.4                                                                                      | 61.7   | 61.0  | 60.0  | 59.1  | 67.4                                                                                        | 66.7  | 65.5  | 64.4  | 63.2  | 68.6    | 67.6  | 66.4  | 65.0  | 63.7  | 32                                                                                  |
| 36                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | 55.7                                                                                        | 55.0  | 54.1  | 53.1  | 52.2  | 56.9    | 56.1  | 55.1  | 54.0  | 52.9  | 36                                                                                  |
| 40                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | 45.7                                                                                        | 45.0  | 44.4  | 43.6  | 42.9  | 46.8    | 46.1  | 45.4  | 44.9  | 44.9  | 40                                                                                  |
| 48                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 35.5    | 35.1  | 34.7  | 34.1  | 33.5  | 48                                                                                  |
| 56                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 27.6    | 27.3  | 26.8  | 26.3  | 25.8  | 56                                                                                  |
| 1)                                                                                                                                                                  |  | 48.1                                                                                      | 48.1   | 48.1  | 48.1  | 48.1  | 33.5                                                                                        | 33.1  | 32.8  | 32.4  | 32.0  | 22.9    | 22.7  | 22.5  | 22.0  | 21.8  | 1)                                                                                  |

|   |  | 84.0 ft |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|-------|-------|-------|------|---------|-------|-------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°    | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |         |       |       |       |      |         |       |       |      |      |          |      |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 222.1   | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -    | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 189.3   | 182.7 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -    | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 157.6   | 154.9 | 145.8 | 115.3 | -    | 144.7   | -     | -     | -    | -    | -        | -    | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 135.8   | 133.5 | 130.3 | 113.3 | 95.0 | 128.0   | 126.0 | 111.5 | -    | -    | 101.2    | -    | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 122.2   | 120.4 | 117.8 | 109.2 | 94.3 | 111.4   | 109.4 | 106.6 | 90.6 | 74.5 | 100.0    | 97.8 | 84.2 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 96.7    | 95.2  | 93.1  | 90.9  | 88.0 | 88.7    | 87.2  | 84.8  | 82.6 | 73.5 | 82.5     | 81.4 | 75.9 | 66.3 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 78.9    | 77.7  | 75.9  | 74.2  | 72.4 | 72.7    | 71.5  | 69.5  | 67.7 | 65.7 | 71.2     | 70.0 | 67.2 | 62.7 | 54.5 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 65.9    | 64.9  | 63.3  | 62.0  | 60.4 | 64.1    | 63.3  | 62.0  | 59.8 | 56.6 | 60.2     | 59.1 | 57.5 | 55.9 | 52.7 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 55.8    | 55.0  | 53.7  | 52.5  | 51.2 | 56.2    | 55.2  | 54.0  | 52.6 | 50.7 | 52.2     | 51.2 | 49.8 | 48.3 | 46.8 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 48.7    | 48.1  | 47.2  | 46.2  | 45.3 | 48.3    | 47.5  | 46.4  | 45.3 | 44.0 | 45.0     | 44.1 | 42.9 | 42.0 | 40.2 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 36.4    | 35.9  | 35.1  | 34.5  | 33.6 | 35.7    | 35.3  | 34.5  | 33.6 | 32.6 | 36.4     | 35.7 | 34.9 | 33.9 | 32.8 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 28.0    | 27.7  | 27.0  | 26.5  | 25.8 | 28.4    | 27.9  | 27.3  | 26.7 | 26.1 | 28.1     | 27.6 | 27.0 | 26.2 | 25.3 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 22.2    | 22.0  | 21.5  | 21.0  | 20.5 | 22.5    | 22.1  | 21.7  | 21.3 | 20.7 | 22.3     | 21.8 | 21.3 | 20.6 | 19.9 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 17.9    | 17.7  | 17.3  | 16.8  | 16.6 | 18.4    | 17.9  | 17.5  | 17.1 | 16.6 | 17.9     | 17.5 | 17.1 | 16.4 | 16.0 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 15.0    | 14.8  | 14.4  | 14.1 | 13.7 | 14.6     | 14.3 | 13.9 | 13.5 | 13.0 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 12.5    | 12.3  | 12.1  | 11.7 | 11.4 | 12.0     | 11.8 | 11.4 | 11.0 | 10.6 | 88                                                                                  |
| 96                                                                                                                                                                  |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 9.8      | 9.6  | 9.4  | 9.1  | 8.9  | 96                                                                                  |
| 104                                                                                                                                                                 |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 8.1      | 8.1  | 7.9  | 7.5  | 7.3  | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 16.3    | 16.1  | 15.9  | 15.7  | 15.4 | 11.9    | 11.7  | 11.5  | 11.5 | 11.2 | 8.2      | 8.2  | 7.9  | 7.7  | 7.7  | 1)                                                                                  |

\* Heavy lift sheave required

\*\* Heavy lift sheave and 7 sheaves hook block required

1) Capacities with horizontal boom



## HA

|  11,000 lb +  33,100 lb |  |  19.7 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                        |  | 78.2                                                                                      | 76.5 | 67.1 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 64.9                                                                                      | 63.6 | 61.5 | 52.9 | 42.8 | 61.8                                                                                        | 58.0 | 50.5 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 56.0                                                                                      | 55.0 | 51.8 | 49.4 | 42.8 | 53.1                                                                                        | 51.8 | 47.8 | 41.0 | -    | 51.7     | 48.7 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 49.4                                                                                      | 49.1 | 46.2 | 43.2 | 39.7 | 46.6                                                                                        | 46.1 | 42.9 | 39.0 | 33.3 | 45.8     | 43.9 | 39.7 | 32.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 44.0                                                                                      | 43.1 | 41.8 | 40.5 | 37.4 | 42.4                                                                                        | 41.4 | 40.1 | 36.1 | 32.8 | 39.8     | 38.8 | 37.5 | 31.8 | 26.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 34.5                                                                                      | 33.7 | 33.2 | 32.5 | 30.6 | 33.4                                                                                        | 32.6 | 31.5 | 30.5 | 29.2 | 32.4     | 32.1 | 30.1 | 28.1 | 25.2 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 27.6                                                                                      | 27.0 | 26.3 | 25.5 | 24.7 | 26.6                                                                                        | 26.3 | 25.9 | 24.8 | 23.3 | 26.4     | 25.7 | 24.8 | 23.8 | 21.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 21.8                                                                                      | 21.3 | 20.7 | 19.9 | 19.3 | 21.9                                                                                        | 21.6 | 20.9 | 20.2 | 19.2 | 21.1     | 20.6 | 19.9 | 19.2 | 18.3 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 17.3                                                                                      | 16.9 | 16.4 | 15.7 | 15.3 | 17.7                                                                                        | 17.3 | 16.6 | 16.2 | 15.5 | 16.8     | 16.4 | 15.7 | 15.1 | 14.4 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 14.1                                                                                      | 13.7 | 13.2 | 12.8 | 12.4 | 14.3                                                                                        | 14.1 | 13.5 | 13.1 | 12.6 | 13.6     | 13.2 | 12.6 | 12.1 | 11.5 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 11.4                                                                                      | 11.2 | 10.7 | 10.3 | 9.9  | 11.8                                                                                        | 11.5 | 11.1 | 10.7 | 10.2 | 11.0     | 10.6 | 10.1 | 9.6  | 9.2  | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 9.4                                                                                       | 9.2  | 8.7  | 8.4  | 8.1  | 9.6                                                                                         | 9.4  | 8.9  | 8.7  | 8.3  | 8.8      | 8.5  | 8.1  | 7.8  | 7.3  | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 7.7                                                                                       | 7.5  | 7.2  | 6.8  | 6.6  | 7.9                                                                                         | 7.7  | 7.3  | 7.0  | 6.8  | 7.0      | 6.8  | 6.4  | 6.2  | 5.7  | 104                                                                                 |
| 112                                                                                                                                                                                       |  | 3.7                                                                                       | 3.5  | 3.2  | 3.0  | 2.8  | 6.3                                                                                         | 6.3  | 5.9  | 5.7  | 5.5  | 5.7      | 5.4  | 5.0  | 4.8  | 4.3  | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 5.3                                                                                         | 5.0  | 4.8  | 4.7  | 4.4  | 4.4      | 4.2  | 3.9  | 3.7  | 3.3  | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 3.2                                                                                         | 3.2  | 3.0  | 2.8  | 2.6  | 3.3      | 3.2  | 3.0  | 2.8  | 2.5  | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 2.4      | 2.4  | -    | -    | -    | 136                                                                                 |
| 1)                                                                                                                                                                                        |  | 5.5                                                                                       | 5.5  | 5.3  | 5.1  | 5.1  | 4.4                                                                                         | 4.4  | 4.2  | 4.2  | 4.0  | 2.2      | -    | -    | -    | -    | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                     |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                  |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 36                                                                                                                                                                  |  | 42.5     | 38.6 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                  |
| 40                                                                                                                                                                  |  | 38.6     | 36.7 | 32.2 | 25.7 | 20.7 | 35.5     | 34.2 | 26.6 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                  |
| 48                                                                                                                                                                  |  | 30.5     | 29.6 | 28.3 | 24.1 | 20.7 | 27.7     | 26.8 | 24.9 | 20.1 | 15.7 | 25.4     | 24.3 | 20.3 | 15.2 | 11.2 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 24.3     | 23.7 | 22.6 | 21.4 | 19.7 | 22.0     | 21.2 | 20.0 | 18.5 | 15.7 | 19.9     | 19.0 | 17.8 | 15.0 | 11.2 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 19.8     | 19.1 | 18.2 | 17.3 | 16.4 | 17.6     | 16.9 | 15.8 | 14.9 | 13.8 | 15.6     | 14.9 | 13.8 | 12.6 | 10.9 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 16.0     | 15.5 | 14.6 | 14.0 | 13.1 | 14.0     | 13.5 | 12.6 | 11.7 | 10.9 | 12.2     | 11.5 | 10.6 | 9.8  | 8.7  | 72                                                                                  |
| 80                                                                                                                                                                  |  | 12.8     | 12.4 | 11.7 | 11.1 | 10.4 | 11.3     | 10.7 | 10.0 | 9.1  | 8.3  | 9.6      | 8.9  | 8.0  | 7.2  | 6.3  | 80                                                                                  |
| 88                                                                                                                                                                  |  | 10.2     | 9.8  | 9.2  | 8.8  | 8.1  | 9.0      | 8.5  | 7.7  | 7.1  | 6.4  | 7.4      | 6.9  | 6.0  | 5.3  | 4.5  | 88                                                                                  |
| 96                                                                                                                                                                  |  | 8.1      | 7.6  | 7.2  | 6.7  | 6.2  | 7.0      | 6.5  | 6.0  | 5.3  | 4.7  | 5.4      | 5.0  | 4.2  | 3.6  | 2.9  | 96                                                                                  |
| 104                                                                                                                                                                 |  | 6.4      | 5.9  | 5.5  | 5.0  | 4.8  | 5.1      | 4.8  | 4.4  | 3.9  | 3.3  | 3.9      | 3.5  | 2.8  | -    | -    | 104                                                                                 |
| 112                                                                                                                                                                 |  | 4.8      | 4.6  | 4.1  | 3.9  | 3.5  | 3.7      | 3.5  | -    | -    | -    | -        | -    | -    | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                 |  | 3.5      | 3.3  | 3.1  | 2.7  | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 120                                                                                 |
| 128                                                                                                                                                                 |  | 2.5      | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 128                                                                                 |
| 1)                                                                                                                                                                  |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

| 0 lb +  33,100 lb                                                                  |  |  19.7 ft |        |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|   |  | 42.3 ft                                                                                   |        |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                  |  | 0,3°                                                                                      | 1°     | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |                                                                                           |        |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 10                                                                                                                                                                  |  | 315.7*                                                                                    | 303.6* | 218.9 | 163.5 | 127.9 | 314.6*                                                                                      | 271.6 | 199.6 | 152.7 | 121.1 | 282.9   | 241.0 | 181.5 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                  |  | 277.3                                                                                     | 275.9  | 212.8 | 159.5 | 125.2 | 270.3                                                                                       | 255.6 | 194.5 | 149.3 | 118.6 | 235.2   | 225.0 | 177.3 | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                  |  | 235.9                                                                                     | 234.3  | 207.0 | 155.9 | 122.6 | 214.4                                                                                       | 211.3 | 189.7 | 146.1 | 116.3 | 184.7   | 182.5 | 171.5 | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                  |  | 193.8                                                                                     | 191.9  | 185.4 | 152.2 | 120.2 | 173.8                                                                                       | 172.2 | 167.2 | 142.8 | 114.2 | 156.1   | 153.6 | 150.1 | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                  |  | 160.9                                                                                     | 159.0  | 155.9 | 140.5 | 117.8 | 147.3                                                                                       | 145.4 | 142.4 | 131.1 | 112.0 | 133.1   | 130.9 | 128.0 | 120.5 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                  |  | 132.5                                                                                     | 130.9  | 128.4 | 126.0 | 113.9 | 123.6                                                                                       | 122.1 | 119.5 | 116.9 | 108.5 | 117.3   | 115.5 | 113.2 | 110.8 | 102.6 | 20                                                                                  |
| 24                                                                                                                                                                  |  | 95.2                                                                                      | 94.1   | 92.4  | 90.8  | 89.0  | 95.3                                                                                        | 95.0  | 93.9  | 92.0  | 90.2  | 91.4    | 90.0  | 88.1  | 86.2  | 84.1  | 24                                                                                  |
| 28                                                                                                                                                                  |  | 69.9                                                                                      | 69.1   | 67.9  | 66.7  | 65.4  | 75.5                                                                                        | 74.6  | 73.2  | 71.8  | 70.3  | 73.8    | 72.7  | 71.1  | 69.5  | 67.9  | 28                                                                                  |
| 32                                                                                                                                                                  |  | 53.9                                                                                      | 53.3   | 52.5  | 51.5  | 50.8  | 58.9                                                                                        | 58.2  | 57.1  | 55.9  | 54.7  | 60.0    | 59.0  | 57.9  | 56.7  | 55.3  | 32                                                                                  |
| 36                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | 48.4                                                                                        | 47.8  | 46.8  | 45.9  | 45.1  | 49.6    | 48.9  | 47.9  | 46.9  | 46.4  | 36                                                                                  |
| 40                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | 39.4                                                                                        | 39.0  | 38.1  | 37.5  | 36.8  | 42.0    | 41.4  | 40.7  | 40.1  | 39.2  | 40                                                                                  |
| 48                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 30.9    | 30.5  | 29.9  | 29.3  | 28.6  | 48                                                                                  |
| 56                                                                                                                                                                  |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 23.5    | 23.2  | 22.8  | 22.3  | 21.8  | 56                                                                                  |
| 1)                                                                                                                                                                  |  | 47.8                                                                                      | 47.4   | 47.0  | 46.3  | 45.6  | 28.4                                                                                        | 28.2  | 27.8  | 27.6  | 27.1  | 19.2    | 19.2  | 18.7  | 18.5  | 18.3  | 1)                                                                                  |

|   |  | 84.0 ft |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|-------|-------|-------|------|---------|-------|-------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°    | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |         |       |       |       |      |         |       |       |      |      |          |      |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 207.4   | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -    | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 167.1   | 164.2 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -    | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 141.4   | 139.6 | 132.1 | 115.3 | -    | 129.6   | -     | -     | -    | -    | -        | -    | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 125.2   | 123.2 | 117.7 | 107.4 | 94.4 | 112.7   | 110.7 | 104.9 | -    | -    | 99.5     | -    | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 107.8   | 106.1 | 103.5 | 100.9 | 92.0 | 97.7    | 96.0  | 93.2  | 89.5 | 74.4 | 90.9     | 88.2 | 82.4 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 84.9    | 83.5  | 81.4  | 79.4  | 77.2 | 78.0    | 77.8  | 73.9  | 71.6 | 69.4 | 75.4     | 73.9 | 70.6 | 64.2 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 69.0    | 67.9  | 66.2  | 64.4  | 62.7 | 67.3    | 66.2  | 64.5  | 61.6 | 57.8 | 62.2     | 60.9 | 59.1 | 57.4 | 53.1 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 58.5    | 58.3  | 57.4  | 56.4  | 54.3 | 56.6    | 55.5  | 54.1  | 52.8 | 51.2 | 52.3     | 51.7 | 49.7 | 48.0 | 46.4 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 50.7    | 50.2  | 49.2  | 48.0  | 46.8 | 48.9    | 47.9  | 46.7  | 45.5 | 44.1 | 46.4     | 45.9 | 43.8 | 41.4 | 39.9 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 42.9    | 42.3  | 41.4  | 40.3  | 39.4 | 41.8    | 41.0  | 39.9  | 38.8 | 37.8 | 40.9     | 40.0 | 39.0 | 37.9 | 36.2 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 31.5    | 31.1  | 30.3  | 29.7  | 28.9 | 31.9    | 31.4  | 30.5  | 29.7 | 29.0 | 31.5     | 30.8 | 30.0 | 29.1 | 28.2 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 24.0    | 23.6  | 23.1  | 22.5  | 22.0 | 24.6    | 24.2  | 23.5  | 22.8 | 22.2 | 24.2     | 23.6 | 23.0 | 22.2 | 21.6 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 18.8    | 18.4  | 18.1  | 17.6  | 17.2 | 19.3    | 18.8  | 18.3  | 17.8 | 17.4 | 18.8     | 18.4 | 17.9 | 17.2 | 16.6 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 14.9    | 14.6  | 14.4  | 14.0  | 13.7 | 15.3    | 15.1  | 14.6  | 14.2 | 13.7 | 14.9     | 14.4 | 14.0 | 13.5 | 13.1 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 12.4    | 12.2  | 11.7  | 11.3 | 11.1 | 12.0     | 11.7 | 11.3 | 10.9 | 10.5 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 10.1    | 9.9   | 9.6   | 9.3  | 9.1  | 9.6      | 9.4  | 9.1  | 8.6  | 8.4  | 88                                                                                  |
| 96                                                                                                                                                                  |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 7.8      | 7.5  | 7.3  | 6.9  | 6.7  | 96                                                                                  |
| 104                                                                                                                                                                 |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 6.2      | 6.1  | 5.9  | 5.6  | 5.4  | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 13.4    | 13.2  | 13.0  | 12.8  | 12.6 | 9.5     | 9.5   | 9.3   | 9.0  | 8.8  | 6.2      | 6.2  | 6.0  | 6.0  | 5.7  | 1)                                                                                  |

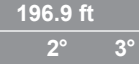
\* Heavy lift sheave required

1) Capacities with horizontal boom



## HA

|  0 lb + 33,100 lb |      |  19.7 ft  |      |      |      |      |  32.2 ft/s  |      |      |      |    | 360° |      |      |      |      | ASME B30.5                                                                          |
|----------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------|------|------|------|------|----------------------------------------------------------------------------------------------|------|------|------|----|------|------|------|------|------|-------------------------------------------------------------------------------------|
|  126.0 ft         |      |  134.8 ft |      |      |      |      |  148.6 ft |      |      |      |    |      |      |      |      |      |  |
| ft                                                                                                 |      | 0,3°                                                                                       | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                         | 1°   | 2°   | 3°   | 4° | 0,3° | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                           |      |                                                                                            |      |      |      |      |                                                                                              |      |      |      |    |      |      |      |      |      |                                                                                     |
| 24                                                                                                 | 68.3 | 66.6                                                                                       | 64.2 | -    | -    | -    | -                                                                                            | -    | -    | -    | -  | -    | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                 | 58.9 | 58.1                                                                                       | 52.9 | 50.0 | 42.8 | 55.9 | 53.2                                                                                         | 48.0 | -    | -    | -  | 50.5 | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                 | 50.6 | 49.5                                                                                       | 47.3 | 43.8 | 40.3 | 48.5 | 47.4                                                                                         | 43.9 | 40.0 | -    | -  | 45.9 | 44.0 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                 | 43.9 | 43.2                                                                                       | 41.5 | 39.2 | 36.4 | 42.1 | 41.1                                                                                         | 39.4 | 35.8 | 32.2 | -  | 40.8 | 38.9 | 36.7 | 31.4 | -    | 36                                                                                  |
| 40                                                                                                 | 38.7 | 37.9                                                                                       | 36.8 | 35.5 | 33.3 | 36.4 | 36.1                                                                                         | 34.2 | 32.9 | 31.6 | -  | 35.7 | 34.8 | 33.1 | 30.3 | 25.8 | 40                                                                                  |
| 48                                                                                                 | 30.2 | 29.6                                                                                       | 28.5 | 27.5 | 26.6 | 30.0 | 29.3                                                                                         | 28.3 | 27.0 | 24.3 | -  | 27.9 | 27.1 | 26.0 | 24.9 | 22.7 | 48                                                                                  |
| 56                                                                                                 | 23.5 | 23.1                                                                                       | 22.3 | 21.4 | 20.7 | 23.8 | 23.2                                                                                         | 22.3 | 21.6 | 20.5 | -  | 22.1 | 21.5 | 20.6 | 19.6 | 18.7 | 56                                                                                  |
| 64                                                                                                 | 18.2 | 17.9                                                                                       | 17.2 | 16.5 | 15.9 | 18.6 | 18.2                                                                                         | 17.5 | 16.8 | 16.1 | -  | 17.6 | 17.1 | 16.4 | 15.5 | 14.8 | 64                                                                                  |
| 72                                                                                                 | 14.4 | 14.0                                                                                       | 13.5 | 12.9 | 12.4 | 14.6 | 14.2                                                                                         | 13.7 | 13.1 | 12.6 | -  | 13.8 | 13.5 | 12.9 | 12.2 | 11.5 | 72                                                                                  |
| 80                                                                                                 | 11.3 | 11.1                                                                                       | 10.6 | 10.2 | 9.8  | 11.7 | 11.3                                                                                         | 10.9 | 10.5 | 10.0 | -  | 10.9 | 10.6 | 10.0 | 9.5  | 8.9  | 80                                                                                  |
| 88                                                                                                 | 9.1  | 8.8                                                                                        | 8.4  | 8.0  | 7.7  | 9.4  | 9.1                                                                                          | 8.6  | 8.3  | 8.0  | -  | 8.5  | 8.3  | 7.7  | 7.3  | 6.9  | 88                                                                                  |
| 96                                                                                                 | 7.2  | 7.0                                                                                        | 6.7  | 6.4  | 6.0  | 7.4  | 7.2                                                                                          | 6.9  | 6.4  | 6.2  | -  | 6.7  | 6.4  | 6.0  | 5.6  | 5.1  | 96                                                                                  |
| 104                                                                                                | 5.7  | 5.5                                                                                        | 5.2  | 5.0  | 4.6  | 5.9  | 5.7                                                                                          | 5.5  | 5.0  | 4.8  | -  | 5.0  | 4.8  | 4.6  | 4.1  | 3.9  | 104                                                                                 |
| 112                                                                                                | -    | -                                                                                          | -    | -    | -    | 4.6  | 4.3                                                                                          | 4.1  | 3.9  | 3.7  | -  | 3.7  | 3.5  | 3.2  | 3.0  | -    | 112                                                                                 |
| 120                                                                                                | -    | -                                                                                          | -    | -    | -    | 3.5  | 3.3                                                                                          | 3.1  | 3.0  | 2.7  | -  | 2.7  | -    | -    | -    | -    | 120                                                                                 |
| 1)                                                                                                 | 3.7  | 3.7                                                                                        | 3.5  | 3.5  | 3.3  | 2.9  | 2.9                                                                                          | 2.6  | 2.4  | 2.4  | -  | -    | -    | -    | -    | -    | 1)                                                                                  |

|  165.7 ft |      |  181.1 ft |      |      |      |      |  196.9 ft |      |      |      |    |      |      |      |      |      |  |
|--------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------|------|------|------|------|----------------------------------------------------------------------------------------------|------|------|------|----|------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                         |      | 0,3°                                                                                       | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                         | 1°   | 2°   | 3°   | 4° | 0,3° | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                   |      |                                                                                            |      |      |      |      |                                                                                              |      |      |      |    |      |      |      |      |      |                                                                                     |
| 36                                                                                         | 38.0 | 36.4                                                                                       | -    | -    | -    | -    | -                                                                                            | -    | -    | -    | -  | -    | -    | -    | -    | -    | 36                                                                                  |
| 40                                                                                         | 32.9 | 32.0                                                                                       | 30.5 | 25.6 | 20.7 | 30.1 | 29.0                                                                                         | 26.3 | 20.1 | -    | -  | -    | -    | -    | -    | -    | 40                                                                                  |
| 48                                                                                         | 25.6 | 24.8                                                                                       | 23.7 | 22.4 | 20.0 | 23.0 | 22.2                                                                                         | 20.9 | 19.0 | 15.6 | -  | 20.9 | 19.8 | 18.4 | 14.9 | 11.2 | 48                                                                                  |
| 56                                                                                         | 20.1 | 19.5                                                                                       | 18.5 | 17.5 | 16.4 | 18.0 | 17.2                                                                                         | 16.0 | 15.0 | 13.8 | -  | 16.0 | 15.1 | 13.9 | 12.7 | 10.5 | 56                                                                                  |
| 64                                                                                         | 16.0 | 15.5                                                                                       | 14.6 | 13.7 | 12.8 | 14.0 | 13.3                                                                                         | 12.3 | 11.3 | 10.4 | -  | 12.2 | 11.5 | 10.4 | 9.3  | 8.1  | 64                                                                                  |
| 72                                                                                         | 12.6 | 12.2                                                                                       | 11.5 | 10.6 | 10.0 | 10.9 | 10.2                                                                                         | 9.3  | 8.4  | 7.6  | -  | 9.1  | 8.4  | 7.6  | 6.5  | 5.6  | 72                                                                                  |
| 80                                                                                         | 10.2 | 9.6                                                                                        | 8.9  | 8.3  | 7.6  | 8.3  | 7.8                                                                                          | 7.0  | 6.3  | 5.4  | -  | 6.7  | 6.1  | 5.2  | 4.4  | 3.7  | 80                                                                                  |
| 88                                                                                         | 7.7  | 7.4                                                                                        | 6.9  | 6.4  | 5.8  | 6.2  | 5.8                                                                                          | 5.1  | 4.4  | 3.7  | -  | 4.7  | 4.2  | 3.4  | -    | -    | 88                                                                                  |
| 96                                                                                         | 5.9  | 5.6                                                                                        | 5.1  | 4.7  | 4.2  | 4.5  | 4.0                                                                                          | 3.5  | 2.8  | -    | -  | 3.1  | 2.6  | -    | -    | -    | 96                                                                                  |
| 104                                                                                        | 4.4  | 3.9                                                                                        | 3.7  | 3.3  | 2.8  | 3.0  | 2.6                                                                                          | -    | -    | -    | -  | -    | -    | -    | -    | -    | 104                                                                                 |
| 112                                                                                        | 3.0  | -                                                                                          | -    | -    | -    | -    | -                                                                                            | -    | -    | -    | -  | -    | -    | -    | -    | -    | 112                                                                                 |
| 1)                                                                                         | -    | -                                                                                          | -    | -    | -    | -    | -                                                                                            | -    | -    | -    | -  | -    | -    | -    | -    | -    | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

|  99,200 lb +  33,100 lb |                                                                                   |  15.6 ft |       |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       | ASME B30.5 |       |       |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|------------|-------|-------|-------------------------------------------------------------------------------------|
|                                                                                                          |  | 42.3 ft                                                                                   |       |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |            |       |       |  |
|                                                                                                                                                                                           |                                                                                   | 0,3°                                                                                      | 1°    | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°         | 3°    | 4°    |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |       |       |       |       |                                                                                             |       |       |       |       |         |       |            |       |       | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 324.4**304.4*                                                                             | 218.9 | 163.5 | 127.9 |       | 321.2**271.6                                                                                | 199.6 | 152.7 | 121.1 |       | 286.6   | 241.0 | 181.5      | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 288.2                                                                                     | 287.1 | 212.8 | 159.5 | 125.2 | 286.0                                                                                       | 263.6 | 194.5 | 149.3 | 118.6 | 271.8   | 233.9 | 177.3      | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 258.3                                                                                     | 257.2 | 207.0 | 155.9 | 122.6 | 256.7                                                                                       | 252.0 | 189.7 | 146.1 | 116.3 | 251.8   | 222.1 | 173.3      | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 233.9                                                                                     | 232.8 | 201.3 | 152.2 | 120.2 | 232.8                                                                                       | 230.9 | 185.0 | 142.8 | 114.2 | 229.5   | 214.5 | 168.8      | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 214.5                                                                                     | 213.2 | 195.8 | 148.7 | 117.8 | 213.2                                                                                       | 211.2 | 180.6 | 139.9 | 112.0 | 203.7   | 196.6 | 165.0      | 130.2 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 194.4                                                                                     | 192.9 | 187.1 | 145.2 | 115.3 | 194.7                                                                                       | 193.2 | 174.2 | 137.1 | 109.9 | 182.9   | 181.7 | 160.5      | 127.7 | 103.7 | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 143.1                                                                                     | 141.9 | 140.0 | 133.2 | 110.1 | 144.4                                                                                       | 142.9 | 140.8 | 129.0 | 106.0 | 143.5   | 141.9 | 139.4      | 122.9 | 99.8  | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 111.4                                                                                     | 110.5 | 109.1 | 107.7 | 101.6 | 114.0                                                                                       | 112.9 | 111.4 | 109.8 | 101.1 | 114.4   | 113.2 | 111.4      | 109.4 | 96.5  | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 90.3                                                                                      | 89.7  | 88.5  | 87.4  | 86.4  | 92.6                                                                                        | 91.7  | 90.6  | 89.2  | 87.8  | 92.9    | 91.9  | 90.6       | 89.0  | 88.0  | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -     | -     | -     | 78.5                                                                                        | 77.8  | 76.8  | 75.7  | 74.6  | 78.9    | 78.6  | 78.1       | 77.5  | 76.6  | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -     | -     | -     | 67.7                                                                                        | 67.1  | 66.2  | 65.3  | 64.4  | 68.6    | 67.9  | 67.0       | 66.0  | 64.9  | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 52.9    | 52.5  | 51.7       | 50.9  | 50.2  | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 42.4    | 42.1  | 41.5       | 40.9  | 40.3  | 56                                                                                  |
| 1)                                                                                                                                                                                        |                                                                                   | 48.1                                                                                      | 48.1  | 48.1  | 48.1  | 48.1  | 35.1                                                                                        | 35.1  | 35.1  | 35.1  | 35.1  | 26.9    | 26.9  | 26.9       | 26.9  | 26.9  | 1)                                                                                  |

|   |  | 84.0 ft  |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |       |      |      |      |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|-------|-------|-------|------|---------|-------|-------|------|------|----------|-------|------|------|------|-------------------------------------------------------------------------------------|--|
|                                                                                                                                                                     |  | 0,3°     | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°    | 2°   | 3°   | 4°   |                                                                                     |  |
| ft                                                                                                                                                                  |  | 1,000 lb |       |       |       |      |         |       |       |      |      |          |       |      |      |      | ft                                                                                  |  |
| 12                                                                                                                                                                  |  | 231.7    | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 12                                                                                  |  |
| 14                                                                                                                                                                  |  | 220.3    | 192.7 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 14                                                                                  |  |
| 16                                                                                                                                                                  |  | 208.6    | 184.8 | 145.9 | 115.3 | -    | 181.9   | -     | -     | -    | -    | -        | -     | -    | -    | -    | 16                                                                                  |  |
| 18                                                                                                                                                                  |  | 188.7    | 174.7 | 145.9 | 115.3 | 95.0 | 171.3   | 143.7 | 114.4 | -    | -    | -        | -     | -    | -    | -    | 18                                                                                  |  |
| 20                                                                                                                                                                  |  | 167.5    | 165.1 | 145.5 | 115.3 | 95.0 | 159.4   | 142.9 | 114.4 | 91.1 | 74.5 | 138.0    | 115.5 | 84.7 | -    | -    | 20                                                                                  |  |
| 24                                                                                                                                                                  |  | 140.9    | 139.2 | 134.9 | 114.0 | 93.7 | 130.6   | 128.7 | 113.5 | 91.1 | 74.5 | 126.3    | 114.6 | 84.7 | 66.8 | 55.5 | 24                                                                                  |  |
| 28                                                                                                                                                                  |  | 113.4    | 112.1 | 110.1 | 104.8 | 91.4 | 113.1   | 112.3 | 106.7 | 91.1 | 74.5 | 106.8    | 105.1 | 84.7 | 66.8 | 54.5 | 28                                                                                  |  |
| 32                                                                                                                                                                  |  | 93.9     | 93.2  | 92.0  | 90.3  | 87.0 | 93.8    | 92.6  | 91.0  | 87.1 | 74.5 | 91.3     | 90.0  | 84.7 | 66.8 | 54.0 | 32                                                                                  |  |
| 36                                                                                                                                                                  |  | 80.6     | 79.9  | 78.5  | 77.3  | 75.9 | 79.7    | 78.7  | 77.2  | 75.8 | 69.5 | 78.1     | 76.9  | 75.0 | 65.1 | 54.0 | 36                                                                                  |  |
| 40                                                                                                                                                                  |  | 68.3     | 67.7  | 66.6  | 65.5  | 64.2 | 67.5    | 66.6  | 65.3  | 64.0 | 62.9 | 65.9     | 64.8  | 63.5 | 62.0 | 53.5 | 40                                                                                  |  |
| 48                                                                                                                                                                  |  | 52.7     | 52.1  | 51.2  | 50.4  | 49.6 | 51.8    | 51.2  | 50.1  | 49.1 | 48.2 | 51.7     | 51.3  | 51.2 | 50.3 | 47.1 | 48                                                                                  |  |
| 56                                                                                                                                                                  |  | 42.2     | 41.7  | 41.0  | 40.3  | 39.7 | 42.0    | 41.7  | 41.3  | 40.9 | 40.6 | 42.4     | 42.0  | 41.2 | 40.3 | 39.6 | 56                                                                                  |  |
| 64                                                                                                                                                                  |  | 34.6     | 34.2  | 33.7  | 33.2  | 32.9 | 35.8    | 35.3  | 34.8  | 34.2 | 33.5 | 34.9     | 34.4  | 33.8 | 33.1 | 32.4 | 64                                                                                  |  |
| 72                                                                                                                                                                  |  | 30.0     | 30.0  | 29.6  | 29.4  | 29.0 | 30.1    | 29.7  | 29.2  | 28.8 | 28.1 | 29.2     | 28.8  | 28.1 | 27.7 | 27.0 | 72                                                                                  |  |
| 80                                                                                                                                                                  |  | -        | -     | -     | -     | -    | 25.7    | 25.5  | 25.0  | 24.6 | 24.2 | 24.8     | 24.5  | 24.1 | 23.5 | 23.3 | 80                                                                                  |  |
| 88                                                                                                                                                                  |  | -        | -     | -     | -     | -    | 17.0    | 17.0  | 16.5  | 16.5 | 16.5 | 21.6     | 21.6  | 21.2 | 21.1 | 21.0 | 88                                                                                  |  |
| 96                                                                                                                                                                  |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 19.6     | 19.5  | 19.2 | 18.8 | 18.6 | 96                                                                                  |  |
| 104                                                                                                                                                                 |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 16.2     | 15.8  | 15.8 | 15.8 | 15.8 | 104                                                                                 |  |
| 1)                                                                                                                                                                  |  | 20.9     | 20.9  | 20.9  | 20.9  | 20.9 | 16.8    | 16.8  | 16.8  | 16.8 | 16.8 | 13.0     | 13.0  | 13.0 | 13.0 | 13.0 | 1)                                                                                  |  |

\* Heavy lift sheave required

\*\* Heavy lift sheave and 7 sheaves hook block required

1) Capacities with horizontal boom



## HA

|  99,200 lb +  33,100 lb |  |  15.6 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                        |  | 91.7                                                                                      | 83.8 | 67.5 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 81.2                                                                                      | 79.0 | 67.0 | 52.9 | 42.8 | 74.8                                                                                        | 67.9 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 73.4                                                                                      | 72.4 | 65.4 | 52.9 | 42.8 | 67.0                                                                                        | 65.2 | 50.7 | 41.0 | -    | 62.9     | 54.8 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 68.5                                                                                      | 68.0 | 63.3 | 52.9 | 42.8 | 60.8                                                                                        | 60.3 | 50.7 | 40.1 | 33.3 | 57.3     | 52.6 | 40.3 | 32.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 63.5                                                                                      | 63.4 | 60.7 | 52.8 | 42.8 | 55.1                                                                                        | 55.1 | 50.3 | 39.1 | 33.3 | 52.0     | 50.1 | 40.1 | 32.0 | 26.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 51.8                                                                                      | 51.0 | 49.9 | 48.7 | 42.4 | 46.5                                                                                        | 46.3 | 44.6 | 39.0 | 33.2 | 43.8     | 42.8 | 39.5 | 31.7 | 25.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 41.1                                                                                      | 40.5 | 39.7 | 38.7 | 37.8 | 38.8                                                                                        | 38.3 | 37.8 | 36.0 | 32.3 | 37.4     | 36.5 | 35.9 | 31.0 | 25.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 33.5                                                                                      | 33.1 | 32.2 | 31.5 | 30.8 | 33.7                                                                                        | 33.0 | 32.6 | 31.5 | 30.3 | 31.5     | 30.9 | 30.8 | 29.5 | 24.9 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 28.7                                                                                      | 28.7 | 28.1 | 27.8 | 27.2 | 28.3                                                                                        | 27.9 | 27.0 | 26.3 | 25.7 | 27.0     | 27.0 | 27.0 | 26.5 | 24.0 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 25.2                                                                                      | 24.8 | 24.4 | 23.9 | 23.3 | 23.9                                                                                        | 23.5 | 23.0 | 22.4 | 22.1 | 24.1     | 23.7 | 23.0 | 22.4 | 21.8 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 21.7                                                                                      | 21.5 | 21.0 | 20.6 | 20.2 | 20.5                                                                                        | 20.2 | 20.1 | 20.0 | 19.8 | 20.6     | 20.3 | 19.7 | 19.1 | 18.6 | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 18.9                                                                                      | 18.7 | 18.2 | 17.9 | 17.5 | 18.2                                                                                        | 18.2 | 18.1 | 17.7 | 17.3 | 17.8     | 17.5 | 17.0 | 16.9 | 15.9 | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 16.6                                                                                      | 16.4 | 15.9 | 15.7 | 15.4 | 16.5                                                                                        | 16.1 | 15.9 | 15.5 | 15.0 | 15.5     | 15.4 | 15.2 | 14.8 | 14.3 | 104                                                                                 |
| 112                                                                                                                                                                                       |  | 13.1                                                                                      | 12.9 | 12.5 | 12.3 | 12.0 | 14.5                                                                                        | 14.2 | 14.0 | 13.6 | 13.4 | 13.8     | 13.8 | 13.4 | 13.2 | 12.7 | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 12.8                                                                                        | 12.6 | 12.4 | 12.0 | 11.8 | 12.2     | 12.1 | 12.1 | 12.0 | 11.3 | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 11.3                                                                                        | 11.2 | 11.0 | 10.8 | 10.6 | 11.2     | 11.1 | 11.0 | 10.8 | 10.5 | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 10.2     | 10.2 | 9.9  | 9.7  | 9.5  | 136                                                                                 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 8.4      | 8.4  | 8.2  | 8.0  | 7.8  | 144                                                                                 |
| 1)                                                                                                                                                                                        |  | 9.9                                                                                       | 9.9  | 9.9  | 9.9  | 9.9  | 8.8                                                                                         | 8.8  | 8.8  | 8.8  | 8.8  | 6.2      | 6.2  | 6.2  | 6.2  | 6.2  | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|--------------------------------------------------------------------------------------|
|                                                                                                                                                                       |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                      |
| ft                                                                                                                                                                    |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                   |
| 36                                                                                                                                                                    |  | 51.2     | 44.9 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                   |
| 40                                                                                                                                                                    |  | 48.2     | 44.2 | 32.6 | 25.7 | 20.7 | 44.2     | 37.5 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                   |
| 48                                                                                                                                                                    |  | 41.5     | 40.1 | 32.6 | 24.9 | 20.7 | 39.5     | 36.6 | 26.7 | 20.1 | 15.7 | 33.3     | 27.6 | 20.5 | 15.2 | 11.2 | 48                                                                                   |
| 56                                                                                                                                                                    |  | 35.4     | 35.1 | 32.2 | 24.9 | 20.1 | 34.6     | 33.5 | 26.7 | 20.1 | 15.7 | 30.6     | 25.9 | 20.5 | 15.2 | 11.2 | 56                                                                                   |
| 64                                                                                                                                                                    |  | 30.5     | 30.5 | 30.0 | 24.9 | 19.6 | 30.0     | 29.9 | 26.0 | 19.9 | 15.7 | 27.0     | 24.0 | 20.5 | 15.2 | 11.2 | 64                                                                                   |
| 72                                                                                                                                                                    |  | 26.5     | 25.9 | 26.1 | 24.0 | 19.6 | 26.1     | 26.1 | 23.9 | 19.8 | 15.7 | 23.4     | 21.7 | 19.9 | 15.2 | 11.2 | 72                                                                                   |
| 80                                                                                                                                                                    |  | 23.1     | 23.0 | 22.6 | 21.2 | 19.5 | 22.8     | 22.4 | 21.4 | 19.6 | 15.6 | 20.5     | 19.0 | 18.3 | 15.2 | 11.2 | 80                                                                                   |
| 88                                                                                                                                                                    |  | 20.2     | 19.7 | 19.3 | 18.6 | 18.0 | 19.5     | 19.1 | 18.4 | 17.7 | 15.2 | 18.0     | 16.7 | 16.8 | 15.1 | 11.2 | 88                                                                                   |
| 96                                                                                                                                                                    |  | 17.3     | 17.0 | 16.5 | 15.9 | 15.3 | 16.7     | 16.4 | 15.7 | 15.2 | 14.4 | 16.0     | 14.8 | 14.9 | 14.3 | 11.2 | 96                                                                                   |
| 104                                                                                                                                                                   |  | 15.0     | 14.6 | 14.2 | 13.7 | 13.2 | 14.7     | 14.7 | 13.6 | 13.6 | 13.1 | 14.1     | 13.2 | 13.2 | 12.8 | 11.2 | 104                                                                                  |
| 112                                                                                                                                                                   |  | 12.9     | 12.7 | 12.3 | 11.8 | 11.4 | 13.1     | 12.7 | 12.3 | 11.8 | 11.4 | 12.3     | 11.8 | 11.4 | 10.9 | 10.5 | 112                                                                                  |
| 120                                                                                                                                                                   |  | 11.3     | 11.1 | 10.8 | 10.3 | 10.1 | 11.4     | 11.1 | 10.7 | 10.3 | 9.8  | 10.6     | 10.2 | 9.8  | 9.3  | 8.7  | 120                                                                                  |
| 128                                                                                                                                                                   |  | 9.8      | 9.7  | 9.7  | 9.1  | 9.1  | 10.0     | 9.6  | 9.3  | 8.9  | 8.5  | 9.0      | 8.7  | 8.3  | 7.8  | 7.4  | 128                                                                                  |
| 136                                                                                                                                                                   |  | 8.8      | 8.8  | 8.8  | 8.2  | 8.2  | 8.5      | 8.2  | 8.0  | 7.6  | 7.1  | 7.6      | 7.4  | 6.9  | 6.5  | 6.0  | 136                                                                                  |
| 144                                                                                                                                                                   |  | 8.0      | 8.0  | 8.0  | 7.5  | 7.3  | 7.3      | 7.1  | 6.7  | 6.4  | 6.0  | 6.4      | 6.0  | 5.8  | 5.3  | 4.9  | 144                                                                                  |
| 152                                                                                                                                                                   |  | 6.1      | 6.0  | 5.6  | 5.4  | 5.2  | 6.2      | 6.0  | 5.6  | 5.4  | 5.2  | 5.2      | 5.0  | 4.7  | 4.3  | 3.9  | 152                                                                                  |
| 160                                                                                                                                                                   |  | -        | -    | -    | -    | -    | 5.3      | 5.0  | 4.8  | 4.6  | 4.4  | 4.3      | 4.1  | 3.7  | 3.5  | 3.1  | 160                                                                                  |
| 168                                                                                                                                                                   |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 3.3      | 3.2  | 3.0  | -    | -    | 168                                                                                  |
| 176                                                                                                                                                                   |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 2.5      | 2.5  | 2.3  | -    | -    | 176                                                                                  |
| 1)                                                                                                                                                                    |  | 3.7      | 3.7  | 3.7  | 3.7  | 3.7  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                   |

1) Capacities with horizontal boom

## HA

|  77,200 lb +  33,100 lb |  |  15.6 ft |        |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|                         |  | 42.3 ft                                                                                   |        |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°     | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
|                                                                                                                                                                                           |  | 1,000 lb                                                                                  |        |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 10                                                                                                                                                                                        |  | 316.8*                                                                                    | 303.8* | 218.9 | 163.5 | 127.9 | 314.6*                                                                                      | 271.6 | 199.6 | 152.7 | 121.1 | 286.6   | 241.0 | 181.5 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                                        |  | 281.9                                                                                     | 280.8  | 212.8 | 159.5 | 125.2 | 279.7                                                                                       | 263.6 | 194.5 | 149.3 | 118.6 | 270.8   | 233.9 | 177.3 | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                                        |  | 252.8                                                                                     | 251.7  | 207.0 | 155.9 | 122.6 | 251.2                                                                                       | 249.0 | 189.7 | 146.1 | 116.3 | 239.1   | 222.1 | 173.3 | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                                        |  | 228.4                                                                                     | 227.3  | 201.3 | 152.2 | 120.2 | 226.2                                                                                       | 225.4 | 185.0 | 142.8 | 114.2 | 206.9   | 204.4 | 168.8 | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                                        |  | 199.6                                                                                     | 198.2  | 185.5 | 148.7 | 117.8 | 199.7                                                                                       | 198.2 | 177.7 | 139.9 | 112.0 | 182.9   | 180.5 | 162.5 | 130.2 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                                        |  | 170.0                                                                                     | 168.4  | 166.1 | 144.0 | 115.3 | 171.5                                                                                       | 169.5 | 167.0 | 136.8 | 109.9 | 159.2   | 157.1 | 154.1 | 127.7 | 103.7 | 20                                                                                  |
| 24                                                                                                                                                                                        |  | 124.2                                                                                     | 123.0  | 121.3 | 119.7 | 108.2 | 127.2                                                                                       | 125.9 | 124.1 | 122.0 | 105.6 | 127.6   | 126.1 | 124.1 | 117.9 | 99.8  | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 96.3                                                                                      | 95.5   | 94.2  | 92.9  | 91.6  | 99.0                                                                                        | 98.0  | 96.6  | 95.0  | 93.4  | 99.3    | 98.3  | 96.6  | 94.9  | 92.2  | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 77.8                                                                                      | 77.1   | 76.2  | 75.2  | 74.1  | 80.4                                                                                        | 79.7  | 78.9  | 78.1  | 77.2  | 82.7    | 81.8  | 80.5  | 79.1  | 77.9  | 32                                                                                  |
| 36                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | 69.1                                                                                        | 68.4  | 67.5  | 66.5  | 65.5  | 70.1    | 69.4  | 68.3  | 67.2  | 66.0  | 36                                                                                  |
| 40                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | 58.4                                                                                        | 57.7  | 57.1  | 56.2  | 55.4  | 59.2    | 58.6  | 57.7  | 56.8  | 55.8  | 40                                                                                  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 45.6    | 45.0  | 44.3  | 43.5  | 42.8  | 48                                                                                  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 36.3    | 35.8  | 35.3  | 34.7  | 34.5  | 56                                                                                  |
| 1)                                                                                                                                                                                        |  | 48.1                                                                                      | 48.1   | 48.1  | 48.1  | 48.1  | 35.1                                                                                        | 35.1  | 35.1  | 35.1  | 35.1  | 26.9    | 26.9  | 26.9  | 26.9  | 26.9  | 1)                                                                                  |

|   |  | 84.0 ft  |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |       |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|-------|-------|-------|------|---------|-------|-------|------|------|----------|-------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°     | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°    | 2°   | 3°   | 4°   | ft                                                                                  |
|                                                                                                                                                                     |  | 1,000 lb |       |       |       |      |         |       |       |      |      |          |       |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 231.7    | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 214.0    | 192.7 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 188.6    | 184.8 | 145.9 | 115.3 | -    | 174.4   | -     | -     | -    | -    | -        | -     | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 170.0    | 167.4 | 145.9 | 115.3 | 95.0 | 155.5   | 140.6 | 114.4 | -    | -    | -        | -     | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 150.8    | 148.8 | 143.8 | 115.3 | 95.0 | 137.6   | 135.3 | 114.4 | 91.1 | 74.5 | 131.9    | 115.2 | 84.7 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 121.8    | 120.1 | 117.7 | 111.2 | 93.7 | 118.0   | 116.3 | 110.7 | 91.1 | 74.5 | 108.7    | 107.0 | 84.7 | 66.8 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 101.4    | 100.3 | 98.7  | 96.0  | 89.4 | 98.5    | 97.1  | 95.1  | 88.8 | 74.5 | 91.6     | 90.1  | 83.4 | 66.8 | 54.5 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 82.5     | 81.4  | 80.0  | 78.7  | 77.1 | 81.4    | 80.2  | 78.7  | 77.1 | 72.9 | 78.5     | 77.1  | 75.1 | 66.8 | 54.0 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 69.9     | 69.0  | 67.8  | 66.6  | 65.3 | 68.9    | 67.9  | 66.6  | 65.2 | 63.7 | 67.1     | 65.9  | 64.3 | 60.6 | 53.3 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 59.0     | 58.4  | 57.3  | 56.2  | 55.1 | 58.1    | 57.3  | 56.2  | 54.9 | 53.6 | 59.4     | 58.6  | 57.5 | 56.2 | 51.4 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 45.3     | 44.7  | 43.9  | 43.1  | 42.3 | 46.6    | 46.0  | 45.1  | 44.3 | 43.5 | 45.6     | 44.9  | 44.1 | 43.1 | 42.0 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 36.6     | 36.5  | 36.1  | 35.8  | 35.2 | 37.1    | 36.7  | 35.9  | 35.3 | 34.6 | 36.3     | 35.7  | 34.9 | 34.2 | 33.4 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 30.8     | 30.5  | 30.1  | 29.6  | 29.1 | 30.4    | 30.1  | 29.4  | 28.9 | 28.3 | 29.5     | 29.1  | 28.5 | 28.5 | 28.1 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 25.9     | 25.7  | 25.2  | 24.8  | 24.4 | 25.5    | 25.0  | 24.6  | 24.1 | 23.7 | 25.7     | 25.4  | 24.8 | 24.3 | 23.9 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -        | -     | -     | -     | -    | 21.5    | 21.3  | 20.9  | 20.5 | 20.4 | 22.0     | 21.5  | 21.1 | 20.7 | 20.3 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -        | -     | -     | -     | -    | 17.0    | 17.0  | 16.5  | 16.5 | 16.5 | 18.9     | 18.5  | 18.3 | 17.9 | 17.5 | 88                                                                                  |
| 96                                                                                                                                                                  |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 16.5     | 16.3  | 15.9 | 15.6 | 15.2 | 96                                                                                  |
| 104                                                                                                                                                                 |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 14.4     | 14.3  | 13.9 | 13.7 | 13.4 | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 20.9     | 20.9  | 20.9  | 20.9  | 20.9 | 16.8    | 16.8  | 16.8  | 16.8 | 16.8 | 13.0     | 13.0  | 13.0 | 13.0 | 13.0 | 1)                                                                                  |

\* Heavy lift sheave required

1) Capacities with horizontal boom





## HA

|  77,200 lb +  33,100 lb |  |  15.6 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                        |  | 91.7                                                                                      | 83.8 | 67.5 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 81.2                                                                                      | 79.0 | 67.0 | 52.9 | 42.8 | 74.8                                                                                        | 67.9 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 73.4                                                                                      | 72.4 | 65.4 | 52.9 | 42.8 | 67.0                                                                                        | 65.2 | 50.7 | 41.0 | -    | 62.9     | 54.8 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 65.9                                                                                      | 65.0 | 61.1 | 52.9 | 42.8 | 60.7                                                                                        | 59.6 | 50.7 | 40.1 | 33.3 | 57.3     | 52.6 | 40.3 | 32.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 57.9                                                                                      | 57.0 | 55.7 | 52.0 | 42.8 | 54.5                                                                                        | 53.2 | 49.9 | 39.1 | 33.3 | 51.9     | 50.0 | 40.1 | 32.0 | 26.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 44.3                                                                                      | 43.4 | 42.4 | 41.3 | 40.3 | 43.2                                                                                        | 42.2 | 40.9 | 37.3 | 33.2 | 41.9     | 40.9 | 38.2 | 31.7 | 25.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 35.6                                                                                      | 35.3 | 34.6 | 33.8 | 32.3 | 35.4                                                                                        | 34.7 | 33.7 | 32.9 | 30.8 | 34.2     | 33.8 | 32.8 | 30.9 | 25.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 29.9                                                                                      | 29.5 | 28.8 | 28.1 | 27.4 | 28.6                                                                                        | 28.1 | 27.8 | 27.6 | 26.7 | 28.8     | 28.3 | 27.4 | 27.0 | 24.9 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 25.0                                                                                      | 24.6 | 23.9 | 23.5 | 22.8 | 24.8                                                                                        | 24.5 | 23.9 | 23.2 | 22.6 | 24.1     | 23.9 | 23.2 | 22.6 | 21.9 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 21.1                                                                                      | 20.7 | 20.3 | 20.1 | 19.8 | 21.1                                                                                        | 20.7 | 20.2 | 19.6 | 19.2 | 20.6     | 20.2 | 19.6 | 19.4 | 18.3 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 18.2                                                                                      | 18.0 | 17.8 | 17.4 | 17.0 | 18.1                                                                                        | 17.6 | 17.2 | 16.8 | 16.3 | 17.7     | 17.6 | 17.4 | 16.8 | 16.1 | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 16.1                                                                                      | 15.9 | 15.4 | 15.0 | 14.8 | 15.5                                                                                        | 15.2 | 14.8 | 14.4 | 14.0 | 15.6     | 15.3 | 15.0 | 14.5 | 14.1 | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 13.9                                                                                      | 13.7 | 13.5 | 13.2 | 12.8 | 13.5                                                                                        | 13.2 | 13.0 | 13.0 | 12.1 | 13.5     | 13.2 | 12.8 | 12.6 | 12.1 | 104                                                                                 |
| 112                                                                                                                                                                                       |  | 10.3                                                                                      | 10.1 | 9.8  | 9.4  | 9.2  | 11.8                                                                                        | 11.8 | 11.8 | 11.6 | 11.0 | 11.8     | 11.6 | 11.2 | 10.9 | 10.5 | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 10.8                                                                                        | 10.8 | 10.5 | 10.3 | 10.1 | 10.3     | 10.0 | 9.8  | 9.4  | 9.2  | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 9.0                                                                                         | 8.8  | 8.6  | 8.4  | 8.2  | 9.0      | 8.8  | 8.6  | 8.4  | 8.0  | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 8.0      | 7.7  | 7.5  | 7.3  | 7.0  | 136                                                                                 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 6.0      | 5.8  | 5.8  | 5.5  | 5.3  | 144                                                                                 |
| 1)                                                                                                                                                                                        |  | 9.9                                                                                       | 9.9  | 9.9  | 9.9  | 9.9  | 8.8                                                                                         | 8.8  | 8.8  | 8.8  | 8.8  | 6.2      | 6.2  | 6.2  | 6.2  | 6.2  | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|--------------------------------------------------------------------------------------|
|                                                                                                                                                                       |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                      |
| ft                                                                                                                                                                    |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                   |
| 36                                                                                                                                                                    |  | 51.2     | 44.9 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                   |
| 40                                                                                                                                                                    |  | 48.2     | 44.2 | 32.6 | 25.7 | 20.7 | 44.2     | 37.5 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                   |
| 48                                                                                                                                                                    |  | 41.3     | 39.8 | 32.6 | 24.9 | 20.7 | 39.5     | 36.6 | 26.7 | 20.1 | 15.7 | 33.3     | 27.6 | 20.5 | 15.2 | 11.2 | 48                                                                                   |
| 56                                                                                                                                                                    |  | 33.7     | 33.3 | 31.5 | 24.9 | 20.1 | 33.9     | 32.7 | 26.7 | 20.1 | 15.7 | 30.6     | 25.9 | 20.5 | 15.2 | 11.2 | 56                                                                                   |
| 64                                                                                                                                                                    |  | 28.3     | 27.7 | 26.9 | 24.9 | 19.6 | 27.7     | 27.0 | 25.3 | 19.9 | 15.7 | 27.0     | 24.0 | 20.5 | 15.2 | 11.2 | 64                                                                                   |
| 72                                                                                                                                                                    |  | 23.3     | 22.8 | 22.1 | 21.3 | 19.6 | 23.2     | 22.8 | 21.3 | 19.8 | 15.7 | 22.6     | 21.7 | 19.9 | 15.2 | 11.2 | 72                                                                                   |
| 80                                                                                                                                                                    |  | 19.6     | 19.1 | 18.8 | 17.8 | 17.2 | 19.6     | 19.1 | 18.5 | 17.5 | 15.6 | 18.9     | 18.3 | 17.6 | 15.1 | 11.2 | 80                                                                                   |
| 88                                                                                                                                                                    |  | 16.8     | 16.8 | 16.6 | 15.7 | 15.1 | 16.5     | 16.2 | 15.6 | 15.0 | 14.4 | 15.8     | 15.4 | 14.6 | 14.0 | 11.2 | 88                                                                                   |
| 96                                                                                                                                                                    |  | 14.9     | 14.6 | 14.2 | 13.7 | 13.2 | 14.1     | 13.7 | 13.2 | 12.6 | 12.1 | 13.3     | 12.9 | 12.3 | 11.7 | 10.7 | 96                                                                                   |
| 104                                                                                                                                                                   |  | 12.8     | 12.6 | 12.1 | 11.7 | 11.3 | 11.9     | 11.7 | 11.3 | 10.6 | 10.2 | 11.3     | 10.8 | 10.4 | 9.7  | 9.1  | 104                                                                                  |
| 112                                                                                                                                                                   |  | 11.2     | 10.9 | 10.5 | 10.1 | 9.6  | 10.3     | 9.8  | 9.4  | 8.9  | 8.5  | 9.4      | 8.9  | 8.5  | 7.8  | 7.4  | 112                                                                                  |
| 120                                                                                                                                                                   |  | 9.6      | 9.4  | 8.9  | 8.7  | 8.3  | 8.7      | 8.3  | 7.8  | 7.4  | 7.0  | 7.8      | 7.3  | 6.9  | 6.3  | 5.9  | 120                                                                                  |
| 128                                                                                                                                                                   |  | 8.3      | 8.0  | 7.7  | 7.4  | 7.0  | 7.2      | 6.9  | 6.5  | 6.2  | 5.7  | 6.3      | 5.9  | 5.5  | 5.1  | 4.6  | 128                                                                                  |
| 136                                                                                                                                                                   |  | 7.1      | 6.9  | 6.5  | 6.2  | 6.0  | 6.0      | 5.8  | 5.3  | 4.9  | 4.7  | 4.9      | 4.7  | 4.3  | 4.0  | 3.5  | 136                                                                                  |
| 144                                                                                                                                                                   |  | 6.0      | 5.8  | 5.5  | 5.3  | 4.9  | 4.9      | 4.7  | 4.2  | 4.0  | 3.6  | 3.8      | 3.6  | 3.3  | 2.9  | 2.5  | 144                                                                                  |
| 152                                                                                                                                                                   |  | 3.9      | 3.6  | 3.4  | 3.2  | 3.0  | 3.9      | 3.6  | 3.4  | 3.2  | 2.8  | 2.9      | -    | -    | -    | -    | 152                                                                                  |
| 160                                                                                                                                                                   |  | -        | -    | -    | -    | -    | 3.1      | 2.8  | 2.6  | -    | -    | -        | -    | -    | -    | -    | 160                                                                                  |
| 1)                                                                                                                                                                    |  | 3.7      | 3.7  | 3.7  | 3.7  | 3.7  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                   |

1) Capacities with horizontal boom

## HA

|  55,100 lb +  33,100 lb |  |  15.6 ft |        |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|                         |  | 42.3 ft                                                                                   |        |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°     | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
| 1,000 lb                                                                                                                                                                                  |  |                                                                                           |        |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 10                                                                                                                                                                                        |  | 310.2*                                                                                    | 303.1* | 218.9 | 163.5 | 127.9 | 308.0*                                                                                      | 271.6 | 199.6 | 152.7 | 121.1 | 284.8   | 241.0 | 181.5 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                                        |  | 275.3                                                                                     | 274.2  | 212.8 | 159.5 | 125.2 | 272.4                                                                                       | 261.5 | 194.5 | 149.3 | 118.6 | 245.5   | 232.5 | 177.3 | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                                        |  | 246.8                                                                                     | 245.7  | 207.0 | 155.9 | 122.6 | 234.9                                                                                       | 233.4 | 189.7 | 146.1 | 116.3 | 209.8   | 206.8 | 173.3 | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                                        |  | 217.2                                                                                     | 215.1  | 201.3 | 152.2 | 120.2 | 197.8                                                                                       | 195.3 | 185.0 | 142.8 | 114.2 | 177.5   | 175.0 | 168.1 | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                                        |  | 180.0                                                                                     | 178.0  | 172.8 | 146.5 | 117.8 | 170.4                                                                                       | 168.3 | 164.9 | 139.9 | 112.0 | 156.4   | 155.3 | 152.0 | 130.2 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                                        |  | 144.1                                                                                     | 142.6  | 140.4 | 138.1 | 114.7 | 147.6                                                                                       | 146.0 | 143.5 | 134.9 | 109.9 | 138.6   | 136.7 | 133.9 | 126.3 | 103.7 | 20                                                                                  |
| 24                                                                                                                                                                                        |  | 104.6                                                                                     | 103.6  | 102.0 | 100.5 | 98.7  | 107.8                                                                                       | 106.6 | 104.8 | 102.9 | 100.4 | 108.2   | 106.8 | 105.6 | 103.4 | 97.0  | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 80.7                                                                                      | 79.9   | 78.7  | 77.5  | 76.3  | 84.8                                                                                        | 84.1  | 82.9  | 81.5  | 80.1  | 86.2    | 85.2  | 83.8  | 82.1  | 80.7  | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 64.9                                                                                      | 64.3   | 63.3  | 62.4  | 61.5  | 68.6                                                                                        | 67.9  | 67.0  | 65.8  | 64.7  | 69.7    | 69.0  | 67.7  | 66.5  | 65.3  | 32                                                                                  |
| 36                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | 57.9                                                                                        | 57.3  | 56.5  | 55.5  | 54.7  | 59.0    | 58.3  | 57.2  | 56.2  | 55.2  | 36                                                                                  |
| 40                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | 48.6                                                                                        | 48.2  | 47.5  | 46.7  | 46.0  | 49.7    | 49.1  | 48.2  | 47.3  | 46.4  | 40                                                                                  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 38.6    | 38.3  | 37.6  | 37.0  | 36.4  | 48                                                                                  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 30.7    | 30.6  | 30.0  | 29.6  | 29.0  | 56                                                                                  |
| 1)                                                                                                                                                                                        |  | 48.1                                                                                      | 48.1   | 48.1  | 48.1  | 48.1  | 35.1                                                                                        | 35.1  | 35.1  | 35.1  | 35.1  | 26.2    | 26.0  | 25.6  | 25.4  | 25.1  | 1)                                                                                  |

|   |  | 84.0 ft |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |       |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|-------|-------|-------|------|---------|-------|-------|------|------|----------|-------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°    | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°    | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |         |       |       |       |      |         |       |       |      |      |          |       |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 220.2   | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 193.2   | 186.0 | 145.9 | -     | -    | -       | -     | -     | -    | -    | -        | -     | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 165.4   | 162.9 | 145.9 | 115.3 | -    | 148.8   | -     | -     | -    | -    | -        | -     | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 145.3   | 143.1 | 135.6 | 115.3 | 95.0 | 136.0   | 132.1 | 114.4 | -    | -    | -        | -     | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 129.0   | 128.8 | 123.4 | 113.9 | 95.0 | 122.0   | 120.1 | 113.0 | 91.1 | 74.5 | 111.0    | 109.0 | 84.7 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 106.9   | 105.4 | 103.3 | 101.1 | 91.2 | 99.6    | 97.9  | 95.6  | 88.8 | 74.5 | 91.1     | 89.4  | 82.6 | 66.8 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 86.1    | 85.0  | 83.4  | 81.6  | 80.0 | 83.0    | 81.7  | 79.8  | 77.9 | 72.6 | 76.5     | 75.8  | 72.7 | 66.3 | 54.5 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 69.5    | 68.6  | 67.4  | 66.0  | 64.5 | 68.4    | 67.5  | 65.9  | 64.4 | 62.8 | 68.9     | 67.9  | 65.7 | 61.0 | 54.0 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 58.8    | 58.0  | 56.9  | 55.8  | 54.4 | 57.9    | 57.5  | 56.7  | 55.4 | 52.9 | 59.3     | 58.3  | 57.0 | 54.3 | 49.9 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 49.5    | 49.0  | 48.7  | 48.6  | 47.8 | 50.8    | 50.1  | 49.1  | 48.2 | 47.1 | 49.9     | 49.1  | 47.9 | 46.7 | 45.6 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 39.3    | 38.9  | 38.1  | 37.4  | 36.6 | 38.9    | 38.3  | 37.4  | 36.7 | 35.9 | 37.8     | 37.3  | 36.6 | 35.8 | 34.6 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 31.2    | 30.8  | 30.2  | 29.7  | 29.1 | 30.8    | 30.3  | 29.6  | 28.9 | 28.5 | 31.1     | 30.6  | 30.0 | 29.4 | 28.6 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 25.5    | 25.1  | 24.6  | 24.2  | 23.7 | 25.3    | 25.2  | 24.8  | 24.2 | 23.7 | 25.3     | 24.9  | 24.4 | 23.9 | 23.2 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 21.0    | 20.8  | 20.6  | 20.1  | 19.7 | 21.3    | 21.0  | 20.6  | 20.1 | 19.7 | 21.0     | 20.8  | 20.2 | 19.7 | 19.3 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 18.1    | 17.9  | 17.4  | 17.2 | 16.8 | 17.8     | 17.4  | 17.0 | 16.6 | 16.2 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 15.5    | 15.4  | 14.9  | 14.7 | 14.5 | 15.1     | 14.8  | 14.5 | 14.3 | 13.8 | 88                                                                                  |
| 96                                                                                                                                                                  |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 13.0     | 12.7  | 12.5 | 12.3 | 11.8 | 96                                                                                  |
| 104                                                                                                                                                                 |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 11.2     | 11.0  | 10.8 | 10.6 | 10.3 | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 19.4    | 19.2  | 19.0  | 18.7  | 18.5 | 15.0    | 14.8  | 14.6  | 14.3 | 14.1 | 11.2     | 11.2  | 11.0 | 10.8 | 10.6 | 1)                                                                                  |

\* Heavy lift sheave required

1) Capacities with horizontal boom



## HA

|  55,100 lb +  33,100 lb |                                                                                   |  15.6 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|--|
|                                                                                                          |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |  |
|                                                                                                                                                                                           |                                                                                   | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |  |
| 24                                                                                                                                                                                        |                                                                                   | 85.4                                                                                      | 81.7 | 67.5 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |  |
| 28                                                                                                                                                                                        |                                                                                   | 75.2                                                                                      | 73.5 | 67.0 | 52.9 | 42.8 | 68.9                                                                                        | 65.5 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |  |
| 32                                                                                                                                                                                        |                                                                                   | 64.6                                                                                      | 63.2 | 61.3 | 52.9 | 42.8 | 59.8                                                                                        | 58.1 | 50.7 | 41.0 | -    | 57.7     | 53.8 | -    | -    | -    | 32                                                                                  |  |
| 36                                                                                                                                                                                        |                                                                                   | 56.2                                                                                      | 55.1 | 53.5 | 49.5 | 42.8 | 53.1                                                                                        | 51.0 | 47.0 | 40.1 | 33.3 | 51.1     | 48.0 | 40.3 | 32.0 | -    | 36                                                                                  |  |
| 40                                                                                                                                                                                        |                                                                                   | 48.4                                                                                      | 47.5 | 46.2 | 44.9 | 42.0 | 48.2                                                                                        | 47.2 | 43.8 | 38.9 | 33.3 | 44.8     | 44.4 | 39.6 | 32.0 | 26.0 | 40                                                                                  |  |
| 48                                                                                                                                                                                        |                                                                                   | 38.4                                                                                      | 37.8 | 36.8 | 35.9 | 33.8 | 36.9                                                                                        | 36.3 | 35.5 | 34.0 | 31.7 | 37.1     | 36.3 | 35.3 | 31.3 | 25.9 | 48                                                                                  |  |
| 56                                                                                                                                                                                        |                                                                                   | 30.3                                                                                      | 29.7 | 29.0 | 28.7 | 27.5 | 30.3                                                                                        | 29.7 | 28.9 | 28.0 | 27.1 | 29.7     | 29.1 | 28.3 | 27.3 | 24.9 | 56                                                                                  |  |
| 64                                                                                                                                                                                        |                                                                                   | 25.1                                                                                      | 24.6 | 24.0 | 23.3 | 22.7 | 24.5                                                                                        | 24.0 | 23.3 | 22.8 | 21.9 | 24.4     | 24.0 | 23.5 | 22.5 | 21.0 | 64                                                                                  |  |
| 72                                                                                                                                                                                        |                                                                                   | 20.6                                                                                      | 20.4 | 19.7 | 19.3 | 18.6 | 20.2                                                                                        | 20.1 | 19.9 | 19.5 | 18.6 | 20.4     | 19.9 | 19.3 | 18.6 | 17.9 | 72                                                                                  |  |
| 80                                                                                                                                                                                        |                                                                                   | 17.4                                                                                      | 17.0 | 16.6 | 16.1 | 15.7 | 17.6                                                                                        | 17.2 | 16.8 | 16.3 | 15.9 | 17.0     | 16.6 | 16.1 | 15.5 | 15.0 | 80                                                                                  |  |
| 88                                                                                                                                                                                        |                                                                                   | 14.7                                                                                      | 14.4 | 14.0 | 13.6 | 13.3 | 14.9                                                                                        | 14.6 | 14.3 | 13.8 | 13.4 | 14.4     | 14.0 | 13.5 | 13.1 | 12.6 | 88                                                                                  |  |
| 96                                                                                                                                                                                        |                                                                                   | 12.6                                                                                      | 12.3 | 12.0 | 11.6 | 11.4 | 12.8                                                                                        | 12.5 | 12.3 | 11.8 | 11.4 | 12.1     | 11.8 | 11.4 | 11.1 | 10.7 | 96                                                                                  |  |
| 104                                                                                                                                                                                       |                                                                                   | 10.8                                                                                      | 10.6 | 10.3 | 10.1 | 9.7  | 11.0                                                                                        | 10.8 | 10.4 | 10.1 | 9.9  | 10.3     | 10.1 | 9.7  | 9.5  | 9.0  | 104                                                                                 |  |
| 112                                                                                                                                                                                       |                                                                                   | 7.0                                                                                       | 6.8  | 6.5  | 6.1  | 5.9  | 9.4                                                                                         | 9.2  | 9.0  | 8.8  | 8.5  | 8.7      | 8.5  | 8.3  | 7.9  | 7.6  | 112                                                                                 |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -    | -    | -    | 8.1                                                                                         | 8.1  | 7.9  | 7.7  | 7.3  | 7.4      | 7.2  | 7.0  | 6.6  | 6.4  | 120                                                                                 |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -    | -    | -    | 6.2                                                                                         | 5.9  | 5.8  | 5.6  | 5.4  | 6.2      | 5.9  | 5.7  | 5.5  | 5.3  | 128                                                                                 |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 5.1      | 5.0  | 4.8  | 4.6  | 4.4  | 136                                                                                 |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 3.6      | 3.3  | 3.1  | 2.9  | 2.9  | 144                                                                                 |  |
| 1)                                                                                                                                                                                        |                                                                                   | 8.6                                                                                       | 8.4  | 8.2  | 8.2  | 7.9  | 7.3                                                                                         | 7.3  | 7.1  | 6.8  | 6.6  | 4.9      | 4.6  | 4.4  | 4.4  | 4.2  | 1)                                                                                  |  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|--------------------------------------------------------------------------------------|
|                                                                                                                                                                       |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                      |
| ft                                                                                                                                                                    |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                   |
| 36                                                                                                                                                                    |  | 48.5     | 43.7 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                   |
| 40                                                                                                                                                                    |  | 44.7     | 41.8 | 32.6 | 25.7 | 20.7 | 42.1     | 37.2 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                   |
| 48                                                                                                                                                                    |  | 35.8     | 34.7 | 31.7 | 24.9 | 20.7 | 34.2     | 32.6 | 26.7 | 20.1 | 15.7 | 32.3     | 27.6 | 20.5 | 15.2 | 11.2 | 48                                                                                   |
| 56                                                                                                                                                                    |  | 28.6     | 28.2 | 26.8 | 24.2 | 20.1 | 28.4     | 27.6 | 24.7 | 20.1 | 15.7 | 26.3     | 24.9 | 20.5 | 15.2 | 11.2 | 56                                                                                   |
| 64                                                                                                                                                                    |  | 23.9     | 23.5 | 22.6 | 20.8 | 19.0 | 22.9     | 22.4 | 21.3 | 19.7 | 15.7 | 21.4     | 20.7 | 19.2 | 15.2 | 11.2 | 64                                                                                   |
| 72                                                                                                                                                                    |  | 19.7     | 19.1 | 18.4 | 17.7 | 17.0 | 18.6     | 18.2 | 17.3 | 16.6 | 15.7 | 17.5     | 16.8 | 16.0 | 14.8 | 11.2 | 72                                                                                   |
| 80                                                                                                                                                                    |  | 16.3     | 15.9 | 15.2 | 14.8 | 14.1 | 15.4     | 15.0 | 14.2 | 13.5 | 12.8 | 14.6     | 13.9 | 13.0 | 12.0 | 10.9 | 80                                                                                   |
| 88                                                                                                                                                                    |  | 13.7     | 13.3 | 12.7 | 12.3 | 11.7 | 12.7     | 12.3 | 11.8 | 11.2 | 10.5 | 12.0     | 11.3 | 10.5 | 9.6  | 8.8  | 88                                                                                   |
| 96                                                                                                                                                                    |  | 11.5     | 11.2 | 10.7 | 10.3 | 9.8  | 10.6     | 10.3 | 9.6  | 9.2  | 8.5  | 9.7      | 9.2  | 8.5  | 7.6  | 7.0  | 96                                                                                   |
| 104                                                                                                                                                                   |  | 9.7      | 9.5  | 9.0  | 8.6  | 8.1  | 8.6      | 8.4  | 7.7  | 7.3  | 6.8  | 7.7      | 7.3  | 6.6  | 5.9  | 5.3  | 104                                                                                  |
| 112                                                                                                                                                                   |  | 8.1      | 7.8  | 7.4  | 7.0  | 6.5  | 7.0      | 6.7  | 6.1  | 5.7  | 5.2  | 6.1      | 5.7  | 5.2  | 4.6  | 3.9  | 112                                                                                  |
| 120                                                                                                                                                                   |  | 6.7      | 6.4  | 6.1  | 5.7  | 5.3  | 5.6      | 5.2  | 4.8  | 4.4  | 3.9  | 4.5      | 4.3  | 3.9  | 3.3  | 2.8  | 120                                                                                  |
| 128                                                                                                                                                                   |  | 5.4      | 5.2  | 4.8  | 4.6  | 4.2  | 4.3      | 4.0  | 3.7  | 3.3  | 2.9  | 3.3      | 3.1  | 2.6  | -    | -    | 128                                                                                  |
| 136                                                                                                                                                                   |  | 4.4      | 4.1  | 3.8  | 3.5  | 3.3  | 3.3      | 3.0  | 2.7  | 2.4  | -    | -        | -    | -    | -    | -    | 136                                                                                  |
| 144                                                                                                                                                                   |  | 3.4      | 3.1  | 2.9  | 2.7  | 2.5  | 2.3      | -    | -    | -    | -    | -        | -    | -    | -    | -    | 144                                                                                  |
| 1)                                                                                                                                                                    |  | 2.2      | 2.2  | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                   |

1) Capacities with horizontal boom



## HA

|  33,100 lb +  33,100 lb |                                                                                   |  15.6 ft |        |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       | ASME B30.5 |       |       |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|------------|-------|-------|-------------------------------------------------------------------------------------|
|                                                                                                          |  | 42.3 ft                                                                                   |        |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |            |       |       |  |
|                                                                                                                                                                                           |                                                                                   | 0,3°                                                                                      | 1°     | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°         | 3°    | 4°    |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |        |       |       |       |                                                                                             |       |       |       |       |         |       |            |       |       | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 302.6*                                                                                    | 302.5* | 218.9 | 163.5 | 127.9 | 298.4*                                                                                      | 270.5 | 199.6 | 152.7 | 121.1 | 264.4   | 239.2 | 181.5      | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 265.9                                                                                     | 264.1  | 212.8 | 159.5 | 125.2 | 243.0                                                                                       | 239.8 | 194.5 | 149.3 | 118.6 | 210.6   | 207.5 | 177.3      | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 221.2                                                                                     | 218.4  | 202.5 | 155.9 | 122.6 | 196.0                                                                                       | 193.4 | 183.1 | 146.1 | 116.3 | 178.3   | 175.6 | 166.9      | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 180.5                                                                                     | 178.2  | 175.0 | 152.2 | 120.2 | 165.9                                                                                       | 163.5 | 160.3 | 142.8 | 114.2 | 150.4   | 148.1 | 144.9      | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 148.1                                                                                     | 146.2  | 143.7 | 134.1 | 116.7 | 142.9                                                                                       | 141.0 | 138.3 | 130.7 | 112.0 | 130.9   | 128.8 | 126.1      | 120.8 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 118.6                                                                                     | 117.1  | 115.2 | 113.0 | 110.9 | 122.1                                                                                       | 120.6 | 118.2 | 115.9 | 108.1 | 117.4   | 115.7 | 113.3      | 111.0 | 102.8 | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 85.5                                                                                      | 84.6   | 83.2  | 81.6  | 80.1  | 90.5                                                                                        | 89.3  | 87.7  | 86.1  | 84.4  | 91.7    | 90.6  | 88.8       | 87.0  | 85.1  | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 64.8   | 63.7  | 62.6  | 61.4  | 69.9                                                                                        | 69.0  | 67.8  | 66.5  | 65.2  | 71.0    | 70.0  | 68.8       | 67.3  | 65.8  | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 52.2                                                                                      | 51.7   | 50.9  | 50.1  | 49.3  | 56.0                                                                                        | 55.4  | 54.4  | 53.4  | 52.3  | 57.1    | 56.4  | 55.3       | 54.1  | 53.2  | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | -                                                                                         | -      | -     | -     | -     | 47.0                                                                                        | 46.5  | 45.6  | 44.8  | 43.9  | 48.0    | 47.4  | 47.0       | 46.5  | 45.7  | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | -                                                                                         | -      | -     | -     | -     | 39.3                                                                                        | 38.8  | 38.0  | 37.4  | 36.7  | 41.3    | 41.0  | 40.2       | 39.3  | 38.5  | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 31.3    | 30.9  | 30.3       | 29.8  | 29.2  | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                         | -      | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 24.6    | 24.2  | 23.9       | 23.3  | 22.9  | 56                                                                                  |
| 1)                                                                                                                                                                                        |                                                                                   | 47.2                                                                                      | 46.7   | 46.1  | 45.4  | 45.0  | 29.3                                                                                        | 29.1  | 28.7  | 28.4  | 28.0  | 20.7    | 20.5  | 20.1       | 19.8  | 19.6  | 1)                                                                                  |

|   |  | 84.0 ft |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|-------|-------|-------|------|---------|-------|-------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°    | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |         |       |       |       |      |         |       |       |      |      |          |      |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 190.8   | -     | -     | -     | -    | -       | -     | -     | -    | -    | -        | -    | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 159.3   | 156.6 | 144.2 | -     | -    | -       | -     | -     | -    | -    | -        | -    | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 139.4   | 137.6 | 130.0 | 115.3 | -    | 128.3   | -     | -     | -    | -    | -        | -    | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 124.3   | 122.3 | 118.3 | 107.9 | 95.0 | 113.3   | 111.3 | 106.0 | -    | -    | 100.8    | -    | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 108.9   | 107.2 | 104.8 | 102.2 | 93.5 | 99.8    | 98.1  | 95.5  | 89.9 | 74.5 | 92.9     | 90.2 | 83.5 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 87.7    | 86.5  | 84.4  | 82.3  | 80.2 | 81.1    | 79.5  | 77.4  | 75.1 | 71.5 | 78.8     | 77.4 | 71.8 | 64.8 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 70.7    | 69.8  | 68.2  | 66.6  | 65.0 | 69.9    | 69.4  | 67.5  | 63.6 | 60.3 | 66.2     | 65.0 | 63.1 | 60.3 | 54.5 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 57.8    | 57.1  | 56.2  | 55.4  | 53.7 | 58.5    | 57.6  | 56.4  | 55.0 | 52.9 | 56.5     | 55.4 | 53.8 | 52.2 | 50.1 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 49.7    | 48.9  | 48.0  | 46.9  | 45.9 | 49.3    | 48.6  | 47.5  | 46.4 | 45.1 | 48.1     | 47.2 | 45.9 | 44.6 | 43.0 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 41.9    | 41.3  | 40.4  | 39.5  | 38.7 | 41.5    | 40.8  | 39.7  | 38.9 | 37.8 | 41.9     | 41.2 | 40.2 | 39.1 | 36.7 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 31.7    | 31.3  | 30.7  | 30.0  | 29.3 | 32.0    | 31.6  | 30.9  | 30.1 | 29.4 | 31.9     | 31.3 | 30.5 | 29.7 | 28.8 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 24.9    | 24.6  | 24.0  | 23.4  | 23.0 | 25.3    | 24.9  | 24.3  | 23.7 | 23.1 | 25.0     | 24.6 | 23.9 | 23.2 | 22.6 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 20.0    | 19.8  | 19.3  | 18.9  | 18.5 | 20.5    | 20.0  | 19.6  | 19.1 | 18.7 | 20.0     | 19.7 | 19.2 | 18.5 | 18.0 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 16.4    | 16.2  | 15.7  | 15.5  | 15.1 | 16.6    | 16.4  | 16.0  | 15.7 | 15.3 | 16.4     | 16.0 | 15.5 | 15.1 | 14.6 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 13.9    | 13.7  | 13.3  | 13.1 | 12.7 | 13.6     | 13.3 | 12.9 | 12.4 | 12.2 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 11.7    | 11.5  | 11.3  | 11.1 | 10.7 | 11.4     | 11.1 | 10.8 | 10.5 | 10.2 | 88                                                                                  |
| 96                                                                                                                                                                  |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 9.5      | 9.3  | 9.1  | 8.9  | 8.6  | 96                                                                                  |
| 104                                                                                                                                                                 |  | -       | -     | -     | -     | -    | -       | -     | -     | -    | -    | 8.1      | 7.9  | 7.7  | 7.4  | 7.2  | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 15.0    | 14.8  | 14.6  | 14.3  | 14.1 | 11.2    | 11.0  | 11.0  | 10.8 | 10.6 | 8.2      | 7.9  | 7.9  | 7.7  | 7.5  | 1)                                                                                  |

\* Heavy lift sheave required

1) Capacities with horizontal boom



## HA

|  33,100 lb +  33,100 lb |                                                                                         |  15.6 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      | ASME B30.5 |      |      |                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------------|------|------|-------------------------------------------------------------------------------------------|
| <br>ft                                                                                                   | <br>ft | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |            |      |      | <br>ft |
|                                                                                                                                                                                           |                                                                                         | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°         | 3°   | 4°   |                                                                                           |
| 1,000 lb                                                                                                                                                                                  |                                                                                         |                                                                                           |      |      |      |      |                                                                                             |      |      |      |      |          |      |            |      |      |                                                                                           |
| 24                                                                                                                                                                                        |                                                                                         | 72.1                                                                                      | 70.4 | 65.5 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -          | -    | -    | 24                                                                                        |
| 28                                                                                                                                                                                        |                                                                                         | 61.3                                                                                      | 60.2 | 57.2 | 52.2 | 42.8 | 58.5                                                                                        | 56.3 | 48.7 | -    | -    | 50.5     | -    | -          | -    | -    | 28                                                                                        |
| 32                                                                                                                                                                                        |                                                                                         | 54.3                                                                                      | 53.5 | 49.7 | 46.9 | 42.8 | 50.9                                                                                        | 50.4 | 46.4 | 41.0 | -    | 49.5     | 47.5 | -          | -    | -    | 32                                                                                        |
| 36                                                                                                                                                                                        |                                                                                         | 47.7                                                                                      | 46.7 | 44.5 | 41.3 | 38.7 | 45.5                                                                                        | 45.1 | 41.3 | 38.0 | 33.3 | 43.4     | 42.3 | 38.8       | 32.0 | -    | 36                                                                                        |
| 40                                                                                                                                                                                        |                                                                                         | 41.0                                                                                      | 40.2 | 39.5 | 37.8 | 36.5 | 40.2                                                                                        | 39.4 | 38.1 | 35.6 | 32.7 | 38.3     | 37.6 | 35.5       | 31.6 | 26.0 | 40                                                                                        |
| 48                                                                                                                                                                                        |                                                                                         | 31.5                                                                                      | 30.8 | 30.0 | 29.0 | 28.2 | 30.8                                                                                        | 30.4 | 29.5 | 28.3 | 27.3 | 31.1     | 30.2 | 29.4       | 27.0 | 24.8 | 48                                                                                        |
| 56                                                                                                                                                                                        |                                                                                         | 24.5                                                                                      | 24.0 | 23.3 | 22.6 | 21.9 | 24.9                                                                                        | 24.4 | 23.7 | 23.0 | 21.2 | 24.2     | 23.5 | 22.8       | 22.0 | 20.6 | 56                                                                                        |
| 64                                                                                                                                                                                        |                                                                                         | 19.6                                                                                      | 19.2 | 18.7 | 18.0 | 17.3 | 19.9                                                                                        | 19.4 | 18.9 | 18.3 | 17.6 | 19.2     | 18.7 | 18.1       | 17.4 | 16.7 | 64                                                                                        |
| 72                                                                                                                                                                                        |                                                                                         | 16.0                                                                                      | 15.5 | 15.1 | 14.6 | 14.2 | 16.2                                                                                        | 15.9 | 15.3 | 14.8 | 14.4 | 15.5     | 15.1 | 14.6       | 14.0 | 13.5 | 72                                                                                        |
| 80                                                                                                                                                                                        |                                                                                         | 13.1                                                                                      | 12.8 | 12.4 | 12.0 | 11.6 | 13.5                                                                                        | 13.1 | 12.7 | 12.2 | 11.8 | 12.8     | 12.4 | 12.0       | 11.3 | 10.9 | 80                                                                                        |
| 88                                                                                                                                                                                        |                                                                                         | 11.0                                                                                      | 10.6 | 10.4 | 9.9  | 9.6  | 11.2                                                                                        | 10.8 | 10.6 | 10.2 | 9.7  | 10.5     | 10.2 | 9.7        | 9.3  | 8.8  | 88                                                                                        |
| 96                                                                                                                                                                                        |                                                                                         | 9.1                                                                                       | 8.9  | 8.6  | 8.2  | 8.0  | 9.3                                                                                         | 9.1  | 8.9  | 8.4  | 8.1  | 8.6      | 8.4  | 8.0        | 7.5  | 7.1  | 96                                                                                        |
| 104                                                                                                                                                                                       |                                                                                         | 7.5                                                                                       | 7.4  | 7.0  | 6.8  | 6.6  | 7.7                                                                                         | 7.5  | 7.3  | 7.0  | 6.6  | 7.0      | 6.8  | 6.4        | 5.9  | 5.7  | 104                                                                                       |
| 112                                                                                                                                                                                       |                                                                                         | 3.7                                                                                       | 3.5  | 3.3  | 3.0  | 2.8  | 6.3                                                                                         | 6.1  | 5.9  | 5.7  | 5.5  | 5.7      | 5.4  | 5.0        | 4.8  | 4.3  | 112                                                                                       |
| 120                                                                                                                                                                                       |                                                                                         | -                                                                                         | -    | -    | -    | -    | 5.3                                                                                         | 5.0  | 4.8  | 4.7  | 4.4  | 4.4      | 4.2  | 3.9        | 3.7  | 3.3  | 120                                                                                       |
| 128                                                                                                                                                                                       |                                                                                         | -                                                                                         | -    | -    | -    | -    | 3.3                                                                                         | 3.2  | 3.0  | 2.8  | 2.6  | 3.4      | 3.2  | 3.0        | 2.8  | 2.5  | 128                                                                                       |
| 136                                                                                                                                                                                       |                                                                                         | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 2.6      | 2.4  | -          | -    | -    | 136                                                                                       |
| 1)                                                                                                                                                                                        |                                                                                         | 5.5                                                                                       | 5.5  | 5.3  | 5.1  | 4.9  | 4.4                                                                                         | 4.4  | 4.2  | 4.0  | 4.0  | 2.2      | 2.2  | -          | -    | -    | 1)                                                                                        |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                     |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                  |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 36                                                                                                                                                                  |  | 41.7     | 38.3 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                  |
| 40                                                                                                                                                                  |  | 36.8     | 36.0 | 32.1 | 25.7 | 20.7 | 34.0     | 32.9 | 26.6 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                  |
| 48                                                                                                                                                                  |  | 29.3     | 28.4 | 27.1 | 23.9 | 20.7 | 26.7     | 25.8 | 24.4 | 20.1 | 15.7 | 24.5     | 23.5 | 20.0 | 15.2 | 11.2 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 23.4     | 22.7 | 21.7 | 20.7 | 19.2 | 21.2     | 20.5 | 19.4 | 18.2 | 15.5 | 19.3     | 18.4 | 17.1 | 14.7 | 11.2 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 18.6     | 18.1 | 17.3 | 16.5 | 15.7 | 17.1     | 16.4 | 15.3 | 14.4 | 13.3 | 15.3     | 14.4 | 13.3 | 12.2 | 10.6 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 14.8     | 14.4 | 13.7 | 13.1 | 12.4 | 13.7     | 13.1 | 12.2 | 11.3 | 10.4 | 12.0     | 11.3 | 10.2 | 9.3  | 8.4  | 72                                                                                  |
| 80                                                                                                                                                                  |  | 12.2     | 11.7 | 11.1 | 10.7 | 10.0 | 11.1     | 10.5 | 9.6  | 8.9  | 8.0  | 9.4      | 8.7  | 7.8  | 7.0  | 6.1  | 80                                                                                  |
| 88                                                                                                                                                                  |  | 9.9      | 9.5  | 9.1  | 8.5  | 8.0  | 8.8      | 8.3  | 7.5  | 6.9  | 6.1  | 7.2      | 6.6  | 5.8  | 5.1  | 4.3  | 88                                                                                  |
| 96                                                                                                                                                                  |  | 8.1      | 7.6  | 7.2  | 6.7  | 6.2  | 6.7      | 6.4  | 5.8  | 5.1  | 4.5  | 5.3      | 4.9  | 4.2  | 3.5  | 2.7  | 96                                                                                  |
| 104                                                                                                                                                                 |  | 6.2      | 5.9  | 5.5  | 5.0  | 4.6  | 5.0      | 4.8  | 4.4  | 3.7  | 3.0  | 3.7      | 3.3  | 2.8  | -    | -    | 104                                                                                 |
| 112                                                                                                                                                                 |  | 4.8      | 4.6  | 4.1  | 3.7  | 3.5  | 3.7      | 3.5  | -    | -    | -    | -        | -    | -    | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                 |  | 3.7      | 3.3  | 3.1  | 2.7  | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 120                                                                                 |
| 128                                                                                                                                                                 |  | 2.5      | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 128                                                                                 |
| 1)                                                                                                                                                                  |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

| 11,000 lb + 33,100 lb |  | 15.6 ft  |        |       |       |       | 32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5 |
|-----------------------|--|----------|--------|-------|-------|-------|-----------|-------|-------|-------|-------|---------|-------|-------|-------|-------|------------|
|                       |  | 42.3 ft  |        |       |       |       | 56.1 ft   |       |       |       |       | 70.2 ft |       |       |       |       |            |
|                       |  | 0,3°     | 1°     | 2°    | 3°    | 4°    | 0,3°      | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    |            |
| ft                    |  | 1,000 lb |        |       |       |       |           |       |       |       |       |         |       |       |       |       | ft         |
| 10                    |  | 292.9*   | 292.6* | 218.9 | 163.5 | 127.9 | 251.8     | 248.5 | 199.6 | 152.7 | 121.1 | 217.7   | 212.4 | 181.1 | -     | -     | 10         |
| 12                    |  | 223.5    | 220.4  | 205.1 | 159.5 | 125.2 | 196.8     | 193.9 | 185.0 | 149.3 | 118.6 | 172.3   | 169.2 | 164.8 | 138.6 | -     | 12         |
| 14                    |  | 174.7    | 172.2  | 168.5 | 153.6 | 122.6 | 158.0     | 155.5 | 151.9 | 141.7 | 116.3 | 141.1   | 138.6 | 135.0 | 128.9 | 110.0 | 14         |
| 16                    |  | 141.8    | 139.8  | 136.8 | 133.6 | 120.2 | 130.8     | 128.7 | 125.8 | 122.7 | 114.2 | 122.8   | 120.7 | 117.9 | 113.8 | 107.8 | 16         |
| 18                    |  | 116.3    | 114.6  | 112.2 | 109.7 | 104.4 | 112.4     | 110.5 | 108.1 | 107.2 | 102.0 | 106.7   | 104.9 | 102.5 | 99.9  | 96.9  | 18         |
| 20                    |  | 93.1     | 91.9   | 89.9  | 88.0  | 86.0  | 98.2      | 96.7  | 94.6  | 92.4  | 90.3  | 92.5    | 91.0  | 88.8  | 86.4  | 84.3  | 20         |
| 24                    |  | 66.4     | 65.5   | 64.1  | 62.9  | 61.5  | 71.3      | 70.2  | 68.8  | 67.4  | 65.7  | 72.5    | 71.2  | 69.4  | 67.6  | 66.0  | 24         |
| 28                    |  | 50.3     | 49.6   | 48.6  | 47.6  | 46.6  | 54.5      | 53.8  | 52.6  | 51.6  | 50.4  | 56.5    | 56.1  | 54.9  | 53.7  | 52.4  | 28         |
| 32                    |  | 39.6     | 39.1   | 38.4  | 37.7  | 37.0  | 43.4      | 42.7  | 41.8  | 40.9  | 40.0  | 45.9    | 45.2  | 44.3  | 43.1  | 42.2  | 32         |
| 36                    |  | -        | -      | -     | -     | -     | 36.1      | 35.5  | 34.8  | 34.0  | 33.2  | 38.4    | 37.8  | 37.1  | 36.1  | 35.3  | 36         |
| 40                    |  | -        | -      | -     | -     | -     | 29.7      | 29.3  | 28.7  | 28.0  | 27.4  | 31.9    | 31.5  | 30.8  | 30.0  | 29.3  | 40         |
| 48                    |  | -        | -      | -     | -     | -     | -         | -     | -     | -     | -     | 23.8    | 23.3  | 22.9  | 22.3  | 21.7  | 48         |
| 56                    |  | -        | -      | -     | -     | -     | -         | -     | -     | -     | -     | 18.3    | 18.0  | 17.5  | 17.1  | 16.8  | 56         |
| 1)                    |  | 35.5     | 35.1   | 34.6  | 34.2  | 33.5  | 21.8      | 21.6  | 21.2  | 20.9  | 20.5  | 15.0    | 14.8  | 14.6  | 14.3  | 14.1  | 1)         |

|     |  | 84.0 ft  |       |       |       |      | 98.1 ft |      |      |      |      | 111.9 ft |      |      |      |      |     |
|-----|--|----------|-------|-------|-------|------|---------|------|------|------|------|----------|------|------|------|------|-----|
|     |  | 0,3°     | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |     |
| ft  |  | 1,000 lb |       |       |       |      |         |      |      |      |      |          |      |      |      |      | ft  |
| 12  |  | 153.6    | -     | -     | -     | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 12  |
| 14  |  | 131.3    | 128.9 | 125.1 | -     | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 14  |
| 16  |  | 111.8    | 109.8 | 106.8 | 103.3 | -    | 100.9   | 95.2 | -    | -    | -    | -        | -    | -    | -    | -    | 16  |
| 18  |  | 98.0     | 96.1  | 93.4  | 90.9  | 85.5 | 89.8    | 88.3 | 84.0 | -    | -    | 85.1     | -    | -    | -    | -    | 18  |
| 20  |  | 85.6     | 83.9  | 81.5  | 79.3  | 76.9 | 82.2    | 80.5 | 77.3 | 71.1 | 68.5 | 75.4     | 73.6 | 71.2 | -    | -    | 20  |
| 24  |  | 71.0     | 70.2  | 68.4  | 65.6  | 61.2 | 66.6    | 65.4 | 63.5 | 61.5 | 58.3 | 62.5     | 62.2 | 57.8 | 55.7 | 53.3 | 24  |
| 28  |  | 57.7     | 56.7  | 55.2  | 53.9  | 52.4 | 55.3    | 54.2 | 52.5 | 50.9 | 49.2 | 53.2     | 52.1 | 49.3 | 46.2 | 44.5 | 28  |
| 32  |  | 46.5     | 45.7  | 44.6  | 43.6  | 42.4 | 46.3    | 45.8 | 44.6 | 42.6 | 41.0 | 45.2     | 44.2 | 42.9 | 41.0 | 38.9 | 32  |
| 36  |  | 39.0     | 38.3  | 37.3  | 36.4  | 35.5 | 39.3    | 38.6 | 37.5 | 36.5 | 35.1 | 38.5     | 37.7 | 36.6 | 35.3 | 34.2 | 36  |
| 40  |  | 32.4     | 31.9  | 31.1  | 30.2  | 29.5 | 33.0    | 32.4 | 31.5 | 30.6 | 29.6 | 32.6     | 31.9 | 30.8 | 30.0 | 28.9 | 40  |
| 48  |  | 24.2     | 23.8  | 23.1  | 22.5  | 21.9 | 24.6    | 24.2 | 23.5 | 22.7 | 22.1 | 24.3     | 23.8 | 22.9 | 22.3 | 21.5 | 48  |
| 56  |  | 18.6     | 18.3  | 17.7  | 17.3  | 16.9 | 19.0    | 18.7 | 18.1 | 17.5 | 17.0 | 18.7     | 18.3 | 17.6 | 17.1 | 16.4 | 56  |
| 64  |  | 14.6     | 14.4  | 13.9  | 13.7  | 13.2 | 15.0    | 14.6 | 14.2 | 13.7 | 13.3 | 14.6     | 14.4 | 13.7 | 13.3 | 12.8 | 64  |
| 72  |  | 11.7     | 11.5  | 11.1  | 10.9  | 10.6 | 12.0    | 11.7 | 11.3 | 11.1 | 10.6 | 11.7     | 11.3 | 10.9 | 10.4 | 10.0 | 72  |
| 80  |  | -        | -     | -     | -     | -    | 9.6     | 9.6  | 9.2  | 9.0  | 8.6  | 9.4      | 9.2  | 8.7  | 8.3  | 8.1  | 80  |
| 88  |  | -        | -     | -     | -     | -    | 7.8     | 7.8  | 7.5  | 7.3  | 7.0  | 7.5      | 7.3  | 7.0  | 6.5  | 6.3  | 88  |
| 96  |  | -        | -     | -     | -     | -    | -       | -    | -    | -    | -    | 5.9      | 5.7  | 5.5  | 5.0  | 4.8  | 96  |
| 104 |  | -        | -     | -     | -     | -    | -       | -    | -    | -    | -    | 4.6      | 4.4  | 4.1  | 3.9  | 3.7  | 104 |
| 1)  |  | 10.6     | 10.4  | 10.1  | 10.1  | 9.9  | 7.5     | 7.5  | 7.3  | 7.1  | 6.8  | 4.6      | 4.6  | 4.4  | 4.2  | 4.0  | 1)  |

\* Heavy lift sheave required

1) Capacities with horizontal boom



## HA

|  11,000 lb +  33,100 lb |  |  15.6 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                     |      |      |      |      | 148.6 ft |      |      |      |      |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                         | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
|                                                                                                                                                                                           |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                              |      |      |      |      |          |      |      |      |      |                                                                                     |
| 24                                                                                                                                                                                        |  | 59.8                                                                                      | 57.3 | 53.6 | -    | -    | 54.8                                                                                         | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 50.1                                                                                      | 49.0 | 46.3 | 43.4 | 40.0 | 48.5                                                                                         | 46.3 | 41.0 | -    | -    | 45.9     | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 42.6                                                                                      | 41.7 | 40.2 | 38.3 | 36.0 | 42.1                                                                                         | 41.0 | 37.9 | 35.6 | -    | 39.2     | 38.0 | 35.8 | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 37.2                                                                                      | 36.3 | 34.8 | 33.6 | 31.8 | 36.7                                                                                         | 35.7 | 34.0 | 31.1 | 29.1 | 34.2     | 33.1 | 31.6 | 29.2 | 25.1 | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 32.1                                                                                      | 31.3 | 30.0 | 28.9 | 27.6 | 31.8                                                                                         | 30.9 | 29.8 | 28.6 | 25.3 | 29.6     | 28.6 | 27.3 | 26.0 | 24.2 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 23.8                                                                                      | 23.3 | 22.4 | 21.6 | 20.8 | 24.1                                                                                         | 23.5 | 22.7 | 21.8 | 21.0 | 22.9     | 22.2 | 21.2 | 20.1 | 18.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 18.3                                                                                      | 17.8 | 17.1 | 16.4 | 15.8 | 18.5                                                                                         | 18.1 | 17.4 | 16.6 | 16.0 | 17.8     | 17.3 | 16.4 | 15.5 | 14.7 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 14.2                                                                                      | 13.9 | 13.3 | 12.8 | 12.1 | 14.6                                                                                         | 14.2 | 13.5 | 13.0 | 12.3 | 13.8     | 13.5 | 12.8 | 12.1 | 11.4 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 11.3                                                                                      | 10.9 | 10.4 | 10.0 | 9.5  | 11.5                                                                                         | 11.1 | 10.6 | 10.2 | 9.8  | 10.9     | 10.4 | 10.0 | 9.3  | 8.7  | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 9.0                                                                                       | 8.7  | 8.3  | 7.9  | 7.4  | 9.2                                                                                          | 9.0  | 8.5  | 8.1  | 7.6  | 8.5      | 8.3  | 7.6  | 7.2  | 6.5  | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 7.1                                                                                       | 6.7  | 6.3  | 6.1  | 5.6  | 7.3                                                                                          | 7.1  | 6.6  | 6.3  | 5.8  | 6.5      | 6.2  | 5.8  | 5.3  | 4.7  | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 5.3                                                                                       | 5.1  | 4.8  | 4.6  | 4.2  | 5.6                                                                                          | 5.3  | 5.0  | 4.7  | 4.4  | 4.9      | 4.6  | 4.2  | 3.7  | 3.3  | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 3.9                                                                                       | 3.9  | 3.5  | 3.3  | 3.0  | 4.3                                                                                          | 4.1  | 3.7  | 3.4  | 3.2  | 3.5      | 3.3  | 2.8  | 2.6  | -    | 104                                                                                 |
| 112                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 3.0                                                                                          | 3.0  | -    | -    | -    | -        | -    | -    | -    | -    | 112                                                                                 |
| 1)                                                                                                                                                                                        |  | 2.4                                                                                       | 2.4  | 2.2  | -    | -    | -                                                                                            | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
|                                                                                                                                                                     |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      |                                                                                     |
| 36                                                                                                                                                                  |  | 31.3     | 30.3 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                  |
| 40                                                                                                                                                                  |  | 27.0     | 26.2 | 24.6 | 23.3 | 20.4 | 24.4     | 23.3 | 21.8 | 19.7 | -    | -        | -    | -    | -    | -    | 40                                                                                  |
| 48                                                                                                                                                                  |  | 20.9     | 20.1 | 18.9 | 17.8 | 16.5 | 18.6     | 17.7 | 16.3 | 15.0 | 13.7 | 16.5     | 15.4 | 14.1 | 12.6 | 10.5 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 16.3     | 15.5 | 14.5 | 13.6 | 12.6 | 14.1     | 13.3 | 12.2 | 11.2 | 10.0 | 12.2     | 11.5 | 10.2 | 8.9  | 7.7  | 56                                                                                  |
| 64                                                                                                                                                                  |  | 12.6     | 12.1 | 11.2 | 10.3 | 9.4  | 10.7     | 10.1 | 9.0  | 8.1  | 7.2  | 9.0      | 8.3  | 7.2  | 6.1  | 5.1  | 64                                                                                  |
| 72                                                                                                                                                                  |  | 9.8      | 9.3  | 8.4  | 7.8  | 6.9  | 8.0      | 7.3  | 6.4  | 5.6  | 4.9  | 6.4      | 5.8  | 4.7  | 3.8  | 2.9  | 72                                                                                  |
| 80                                                                                                                                                                  |  | 7.6      | 7.0  | 6.3  | 5.7  | 5.0  | 5.9      | 5.2  | 4.6  | 3.7  | -    | 4.3      | 3.7  | -    | -    | -    | 80                                                                                  |
| 88                                                                                                                                                                  |  | 5.6      | 5.2  | 4.6  | 4.1  | 3.4  | 4.1      | 3.4  | 2.9  | -    | -    | -        | -    | -    | -    | -    | 88                                                                                  |
| 96                                                                                                                                                                  |  | 4.0      | 3.7  | 3.1  | 2.6  | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 96                                                                                  |
| 104                                                                                                                                                                 |  | 2.8      | 2.4  | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 104                                                                                 |
| 1)                                                                                                                                                                  |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

| 0 lb + 33,100 lb |  | 15.6 ft  |       |       |       |       | 32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5 |
|------------------|--|----------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|---------|-------|-------|-------|-------|------------|
|                  |  | 42.3 ft  |       |       |       |       | 56.1 ft   |       |       |       |       | 70.2 ft |       |       |       |       |            |
|                  |  | 0,3°     | 1°    | 2°    | 3°    | 4°    | 0,3°      | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    |            |
| ft               |  | 1,000 lb |       |       |       |       |           |       |       |       |       |         |       |       |       |       | ft         |
| 10               |  | 266.1    | 261.8 | 217.5 | 163.5 | 127.9 | 224.7     | 220.4 | 197.1 | 152.7 | 121.1 | 190.4   | 186.9 | 178.9 | -     | -     | 10         |
| 12               |  | 194.6    | 191.6 | 187.0 | 159.1 | 125.2 | 171.7     | 168.8 | 164.5 | 146.8 | 118.6 | 150.1   | 147.1 | 142.9 | 134.0 | -     | 12         |
| 14               |  | 151.3    | 148.9 | 145.5 | 141.8 | 122.6 | 137.3     | 135.0 | 131.6 | 128.0 | 115.9 | 127.1   | 124.8 | 121.5 | 116.7 | 108.7 | 14         |
| 16               |  | 122.4    | 120.3 | 117.6 | 114.6 | 110.6 | 115.2     | 113.7 | 111.6 | 108.8 | 104.4 | 106.9   | 104.8 | 102.1 | 99.3  | 96.4  | 16         |
| 18               |  | 100.4    | 98.8  | 96.5  | 94.1  | 91.7  | 99.9      | 98.1  | 95.7  | 93.4  | 90.9  | 92.7    | 90.9  | 88.5  | 86.0  | 83.5  | 18         |
| 20               |  | 80.4     | 79.3  | 77.4  | 75.7  | 73.8  | 85.1      | 83.6  | 81.5  | 79.5  | 77.4  | 80.1    | 78.6  | 76.4  | 74.3  | 72.1  | 20         |
| 24               |  | 57.0     | 56.2  | 54.8  | 53.6  | 52.3  | 61.8      | 60.9  | 59.5  | 58.0  | 56.6  | 63.6    | 63.0  | 61.4  | 59.8  | 58.1  | 24         |
| 28               |  | 42.7     | 42.1  | 41.1  | 40.3  | 39.3  | 47.1      | 46.3  | 45.2  | 44.1  | 43.0  | 49.8    | 49.1  | 47.8  | 46.6  | 45.3  | 28         |
| 32               |  | 33.4     | 32.9  | 32.2  | 31.5  | 30.8  | 37.1      | 36.6  | 35.6  | 34.8  | 34.0  | 39.7    | 39.0  | 38.1  | 37.0  | 36.0  | 32         |
| 36               |  | -        | -     | -     | -     | -     | 30.6      | 30.2  | 29.4  | 28.7  | 28.0  | 33.1    | 32.4  | 31.7  | 30.8  | 30.0  | 36         |
| 40               |  | -        | -     | -     | -     | -     | 25.0      | 24.8  | 24.1  | 23.5  | 22.8  | 27.4    | 26.7  | 26.1  | 25.4  | 24.8  | 40         |
| 48               |  | -        | -     | -     | -     | -     | -         | -     | -     | -     | -     | 20.0    | 19.7  | 19.1  | 18.5  | 18.1  | 48         |
| 56               |  | -        | -     | -     | -     | -     | -         | -     | -     | -     | -     | 15.2    | 14.8  | 14.4  | 14.0  | 13.7  | 56         |
| 1)               |  | 29.8     | 29.3  | 28.9  | 28.4  | 28.0  | 18.1      | 17.9  | 17.6  | 17.2  | 17.0  | 12.3    | 12.1  | 11.9  | 11.7  | 11.5  | 1)         |

|     |  | 84.0 ft  |       |       |      |      | 98.1 ft |      |      |      |      | 111.9 ft |      |      |      |      |     |
|-----|--|----------|-------|-------|------|------|---------|------|------|------|------|----------|------|------|------|------|-----|
|     |  | 0,3°     | 1°    | 2°    | 3°   | 4°   | 0,3°    | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |     |
| ft  |  | 1,000 lb |       |       |      |      |         |      |      |      |      |          |      |      |      |      | ft  |
| 12  |  | 137.3    | -     | -     | -    | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 12  |
| 14  |  | 114.3    | 112.1 | 108.8 | -    | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 14  |
| 16  |  | 97.1     | 95.2  | 92.3  | 89.3 | -    | 91.8    | 89.9 | -    | -    | -    | -        | -    | -    | -    | -    | 16  |
| 18  |  | 84.8     | 83.5  | 80.5  | 78.0 | 75.4 | 80.9    | 79.3 | 75.1 | -    | -    | 73.5     | -    | -    | -    | -    | 18  |
| 20  |  | 77.0     | 75.7  | 73.5  | 70.1 | 65.4 | 71.1    | 69.6 | 67.4 | 65.3 | 61.3 | 67.5     | 66.0 | 61.0 | -    | -    | 20  |
| 24  |  | 61.6     | 60.4  | 58.7  | 57.0 | 55.3 | 58.5    | 57.6 | 55.3 | 52.5 | 50.6 | 54.9     | 53.6 | 51.3 | 47.7 | 45.1 | 24  |
| 28  |  | 49.9     | 49.0  | 47.5  | 46.1 | 44.7 | 48.6    | 47.6 | 46.2 | 44.1 | 41.6 | 45.6     | 44.4 | 42.9 | 41.4 | 38.7 | 28  |
| 32  |  | 40.2     | 39.5  | 38.3  | 37.4 | 36.2 | 40.4    | 39.5 | 38.3 | 37.1 | 36.0 | 38.6     | 37.5 | 36.1 | 34.8 | 33.4 | 32  |
| 36  |  | 33.5     | 32.9  | 32.0  | 31.1 | 30.1 | 34.1    | 33.3 | 32.4 | 31.3 | 30.2 | 33.0     | 32.1 | 30.9 | 29.8 | 28.6 | 36  |
| 40  |  | 27.8     | 27.2  | 26.5  | 25.6 | 24.8 | 28.2    | 27.6 | 26.9 | 26.1 | 25.0 | 27.8     | 27.2 | 26.3 | 25.2 | 24.3 | 40  |
| 48  |  | 20.4     | 20.0  | 19.3  | 18.7 | 18.3 | 20.8    | 20.4 | 19.8 | 19.1 | 18.5 | 20.6     | 20.0 | 19.3 | 18.5 | 17.9 | 48  |
| 56  |  | 15.4     | 15.2  | 14.7  | 14.2 | 13.8 | 15.9    | 15.5 | 15.0 | 14.4 | 14.0 | 15.5     | 15.2 | 14.5 | 14.0 | 13.3 | 56  |
| 64  |  | 11.9     | 11.7  | 11.4  | 11.0 | 10.5 | 12.3    | 12.1 | 11.6 | 11.2 | 10.7 | 11.9     | 11.7 | 11.2 | 10.7 | 10.1 | 64  |
| 72  |  | 9.3      | 9.1   | 8.9   | 8.6  | 8.2  | 9.8     | 9.3  | 9.1  | 8.7  | 8.4  | 9.3      | 9.1  | 8.7  | 8.2  | 7.8  | 72  |
| 80  |  | -        | -     | -     | -    | -    | 7.6     | 7.4  | 7.0  | 6.8  | 6.4  | 7.2      | 7.0  | 6.5  | 6.1  | 5.7  | 80  |
| 88  |  | -        | -     | -     | -    | -    | 5.8     | 5.7  | 5.5  | 5.3  | 4.9  | 5.4      | 5.2  | 4.8  | 4.5  | 4.2  | 88  |
| 96  |  | -        | -     | -     | -    | -    | -       | -    | -    | -    | -    | 3.9      | 3.7  | 3.5  | 3.2  | 3.0  | 96  |
| 104 |  | -        | -     | -     | -    | -    | -       | -    | -    | -    | -    | 2.8      | 2.7  | 2.5  | 2.3  | -    | 104 |
| 1)  |  | 8.4      | 8.2   | 8.2   | 7.9  | 7.7  | 5.5     | 5.3  | 5.3  | 5.1  | 4.9  | 2.9      | 2.9  | 2.6  | 2.4  | 2.4  | 1)  |

1) Capacities with horizontal boom



## HA

|  0 lb +  33,100 lb |  |  15.6 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                    |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                      |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                   |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                   |  | 51.4                                                                                      | 50.0 | 46.9 | -    | -    | 50.2                                                                                        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                   |  | 42.8                                                                                      | 41.6 | 40.0 | 38.4 | 35.5 | 42.0                                                                                        | 40.8 | 38.4 | -    | -    | 38.8     | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                   |  | 36.2                                                                                      | 35.1 | 33.8 | 32.2 | 30.8 | 35.6                                                                                        | 34.6 | 33.3 | 31.5 | 27.1 | 33.1     | 31.9 | 30.4 | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                   |  | 31.3                                                                                      | 30.4 | 29.1 | 27.8 | 26.4 | 30.9                                                                                        | 30.0 | 28.8 | 27.4 | 24.9 | 28.5     | 27.5 | 26.1 | 24.8 | 23.0 | 36                                                                                  |
| 40                                                                                                                                                                                   |  | 26.8                                                                                      | 26.1 | 24.8 | 23.8 | 22.5 | 26.6                                                                                        | 25.7 | 24.6 | 23.5 | 22.3 | 24.4     | 23.6 | 22.3 | 21.2 | 19.9 | 40                                                                                  |
| 48                                                                                                                                                                                   |  | 20.1                                                                                      | 19.6 | 18.7 | 17.9 | 16.9 | 20.4                                                                                        | 19.6 | 18.8 | 17.8 | 16.9 | 18.6     | 17.9 | 16.9 | 15.9 | 14.8 | 48                                                                                  |
| 56                                                                                                                                                                                   |  | 15.1                                                                                      | 14.6 | 14.0 | 13.3 | 12.7 | 15.4                                                                                        | 15.0 | 14.3 | 13.6 | 12.8 | 14.2     | 13.7 | 12.8 | 11.9 | 10.9 | 56                                                                                  |
| 64                                                                                                                                                                                   |  | 11.5                                                                                      | 11.2 | 10.6 | 10.1 | 9.6  | 11.9                                                                                        | 11.5 | 11.0 | 10.3 | 9.8  | 11.0     | 10.5 | 9.6  | 8.9  | 8.0  | 64                                                                                  |
| 72                                                                                                                                                                                   |  | 8.9                                                                                       | 8.7  | 8.0  | 7.5  | 7.1  | 9.1                                                                                         | 8.9  | 8.4  | 7.8  | 7.3  | 8.4      | 7.8  | 7.1  | 6.4  | 5.8  | 72                                                                                  |
| 80                                                                                                                                                                                   |  | 6.8                                                                                       | 6.4  | 5.9  | 5.5  | 5.0  | 7.0                                                                                         | 6.8  | 6.3  | 5.9  | 5.3  | 6.3      | 5.9  | 5.3  | 4.6  | 4.2  | 80                                                                                  |
| 88                                                                                                                                                                                   |  | 5.0                                                                                       | 4.7  | 4.3  | 4.0  | 3.5  | 5.2                                                                                         | 5.0  | 4.5  | 4.2  | 3.7  | 4.5      | 4.1  | 3.6  | 3.1  | -    | 88                                                                                  |
| 96                                                                                                                                                                                   |  | 3.5                                                                                       | 3.3  | 3.0  | 2.6  | -    | 3.7                                                                                         | 3.5  | 3.2  | 2.8  | 2.5  | 3.1      | 2.6  | -    | -    | -    | 96                                                                                  |
| 104                                                                                                                                                                                  |  | 2.3                                                                                       | -    | -    | -    | -    | 2.6                                                                                         | 2.3  | -    | -    | -    | -        | -    | -    | -    | -    | 104                                                                                 |
| 1)                                                                                                                                                                                   |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |     | 196.9 ft |      |      |     |    |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|-----|----------|------|------|-----|----|-------------------------------------------------------------------------------------|
|                                                                                                                                                                     |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°  | 0,3°     | 1°   | 2°   | 3°  | 4° |                                                                                     |
| ft                                                                                                                                                                  |  | 1,000 lb |      |      |      |      |          |      |      |      |     |          |      |      |     |    | ft                                                                                  |
| 36                                                                                                                                                                  |  | 26.0     | 24.9 | -    | -    | -    | -        | -    | -    | -    | -   | -        | -    | -    | -   | -  | 36                                                                                  |
| 40                                                                                                                                                                  |  | 22.2     | 21.2 | 19.9 | 18.5 | 17.0 | 19.6     | 18.5 | 17.0 | 15.5 | -   | -        | -    | -    | -   | -  | 40                                                                                  |
| 48                                                                                                                                                                  |  | 16.7     | 15.9 | 14.8 | 13.5 | 12.5 | 14.5     | 13.5 | 12.4 | 11.2 | 9.8 | 12.4     | 11.5 | 10.1 | 8.8 | -  | 48                                                                                  |
| 56                                                                                                                                                                  |  | 12.6     | 11.9 | 10.9 | 9.9  | 8.9  | 10.6     | 9.8  | 8.7  | 7.6  | 6.5 | 8.7      | 8.0  | 6.6  | 5.5 | -  | 56                                                                                  |
| 64                                                                                                                                                                  |  | 9.4      | 8.8  | 8.0  | 7.2  | 6.2  | 7.6      | 6.9  | 6.0  | 4.9  | 4.0 | 5.8      | 5.2  | 4.0  | 3.1 | -  | 64                                                                                  |
| 72                                                                                                                                                                  |  | 6.9      | 6.4  | 5.6  | 4.9  | 4.0  | 5.1      | 4.5  | 3.8  | 2.9  | -   | 3.6      | 2.9  | -    | -   | -  | 72                                                                                  |
| 80                                                                                                                                                                  |  | 4.8      | 4.4  | 3.7  | -    | -    | -        | -    | -    | -    | -   | -        | -    | -    | -   | -  | 80                                                                                  |
| 88                                                                                                                                                                  |  | 3.2      | 2.9  | -    | -    | -    | -        | -    | -    | -    | -   | -        | -    | -    | -   | -  | 88                                                                                  |
| 1)                                                                                                                                                                  |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -   | -        | -    | -    | -   | -  | 1)                                                                                  |

1) Capacities with horizontal boom

## HA

|  99,200 lb +  33,100 lb |  |  11.5 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°    |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|---------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 42.3 ft                                                                                   |      |      |      |      | 56.1 ft                                                                                     |      |      |      |      | 70.2 ft |      |      |      |      |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°    | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
|                                                                                                                                                                                           |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |         |      |      |      |      |                                                                                     |
| 28                                                                                                                                                                                        |  | 82.0                                                                                      | 81.1 | 79.9 | 78.7 | 77.3 | 85.5                                                                                        | 84.9 | 83.5 | 82.1 | 80.7 | 86.9    | 85.9 | 84.3 | 82.9 | 81.2 | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 67.2                                                                                      | 66.5 | 65.6 | 64.7 | 63.5 | 70.6                                                                                        | 70.0 | 68.8 | 67.6 | 66.5 | 71.7    | 70.8 | 69.5 | 68.3 | 66.9 | 32                                                                                  |
| 36                                                                                                                                                                                        |  | -                                                                                         | -    | -    | -    | -    | 60.4                                                                                        | 59.7 | 58.8 | 57.9 | 56.9 | 61.4    | 60.6 | 59.5 | 58.4 | 57.3 | 36                                                                                  |
| 40                                                                                                                                                                                        |  | -                                                                                         | -    | -    | -    | -    | 51.5                                                                                        | 50.8 | 50.2 | 49.3 | 48.5 | 52.3    | 51.7 | 50.8 | 49.8 | 48.9 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 40.4    | 40.0 | 39.4 | 38.8 | 38.6 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 33.2    | 33.0 | 32.3 | 31.8 | 31.2 | 56                                                                                  |
| 1)                                                                                                                                                                                        |  | 48.1                                                                                      | 48.1 | 48.1 | 48.1 | 48.1 | 35.1                                                                                        | 35.1 | 35.1 | 35.1 | 35.1 | 26.9    | 26.9 | 26.9 | 26.9 | 26.9 | 1)                                                                                  |

|   |  | 84.0 ft  |      |      |      |      | 98.1 ft |      |      |      |      | 111.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|---------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°    | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
|                                                                                                                                                                     |  | 1,000 lb |      |      |      |      |         |      |      |      |      |          |      |      |      |      |                                                                                     |
| 28                                                                                                                                                                  |  | 86.7     | 85.5 | 83.8 | 82.2 | 80.5 | 85.0    | 83.7 | 81.7 | 79.7 | 73.5 | 79.7     | 78.3 | 76.0 | 66.8 | 54.5 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 71.5     | 70.6 | 69.2 | 67.6 | 66.3 | 70.4    | 69.5 | 67.9 | 66.3 | 64.7 | 70.4     | 69.4 | 66.9 | 62.8 | 54.0 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 61.2     | 60.4 | 59.2 | 57.9 | 56.6 | 60.1    | 59.3 | 58.0 | 56.6 | 55.2 | 61.6     | 60.6 | 59.0 | 55.6 | 51.1 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 52.1     | 51.5 | 50.4 | 49.3 | 48.8 | 53.4    | 52.8 | 51.7 | 50.6 | 49.5 | 52.6     | 51.7 | 50.4 | 49.3 | 48.0 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 41.6     | 41.3 | 40.5 | 39.8 | 39.0 | 41.5    | 40.9 | 40.0 | 39.2 | 38.3 | 40.6     | 40.0 | 38.9 | 38.1 | 37.1 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 33.8     | 33.4 | 32.8 | 32.1 | 31.6 | 33.3    | 32.9 | 32.1 | 31.4 | 30.7 | 32.8     | 32.6 | 31.9 | 31.5 | 30.6 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 27.8     | 27.5 | 27.0 | 26.6 | 25.9 | 27.3    | 26.9 | 26.4 | 25.7 | 25.6 | 27.8     | 27.3 | 26.7 | 26.2 | 25.4 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 23.5     | 23.0 | 22.8 | 22.4 | 21.9 | 23.2    | 23.2 | 22.8 | 22.3 | 21.7 | 23.2     | 22.8 | 22.4 | 21.9 | 21.3 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -        | -    | -    | -    | -    | 20.0    | 19.8 | 19.4 | 19.0 | 18.8 | 19.8     | 19.6 | 19.2 | 18.7 | 18.1 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -        | -    | -    | -    | -    | 17.0    | 16.9 | 16.5 | 16.3 | 16.3 | 17.0     | 16.8 | 16.4 | 16.0 | 15.6 | 88                                                                                  |
| 96                                                                                                                                                                  |  | -        | -    | -    | -    | -    | -       | -    | -    | -    | -    | 14.8     | 14.5 | 14.2 | 14.0 | 13.6 | 96                                                                                  |
| 104                                                                                                                                                                 |  | -        | -    | -    | -    | -    | -       | -    | -    | -    | -    | 13.0     | 12.8 | 12.5 | 12.3 | 11.9 | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 20.9     | 20.9 | 20.9 | 20.9 | 20.5 | 16.8    | 16.8 | 16.5 | 16.1 | 15.9 | 13.0     | 12.8 | 12.8 | 12.6 | 12.3 | 1)                                                                                  |

1) Capacities with horizontal boom

## HA

|  99,200 lb +  33,100 lb |  |  11.5 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 28                                                                                                                                                                                        |  | 77.7                                                                                      | 75.3 | 67.0 | 52.9 | 42.8 | 72.0                                                                                        | 67.5 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 68.1                                                                                      | 66.7 | 63.9 | 52.9 | 42.8 | 63.0                                                                                        | 60.9 | 50.7 | 41.0 | -    | 60.1     | 54.8 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 59.3                                                                                      | 58.2 | 56.6 | 50.8 | 42.8 | 56.2                                                                                        | 54.7 | 48.8 | 40.1 | 33.3 | 53.4     | 50.5 | 40.3 | 32.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 51.0                                                                                      | 50.2 | 48.9 | 47.5 | 42.3 | 49.7                                                                                        | 48.0 | 46.3 | 39.1 | 33.3 | 48.4     | 46.9 | 40.0 | 32.0 | 26.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 40.0                                                                                      | 39.8 | 38.8 | 37.5 | 35.3 | 39.7                                                                                        | 38.9 | 37.8 | 35.9 | 32.5 | 38.6     | 38.2 | 36.2 | 31.7 | 25.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 32.9                                                                                      | 32.3 | 31.6 | 30.7 | 29.9 | 31.7                                                                                        | 31.5 | 31.0 | 30.3 | 28.4 | 31.8     | 31.2 | 30.7 | 29.1 | 25.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 26.9                                                                                      | 26.4 | 25.8 | 25.4 | 24.9 | 26.9                                                                                        | 26.4 | 25.7 | 25.1 | 24.3 | 26.4     | 25.8 | 25.1 | 24.2 | 23.0 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 23.0                                                                                      | 22.6 | 21.9 | 21.5 | 20.8 | 22.4                                                                                        | 21.9 | 21.5 | 20.8 | 20.2 | 22.1     | 21.9 | 21.5 | 20.8 | 19.3 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 19.4                                                                                      | 19.2 | 18.7 | 18.1 | 17.7 | 18.9                                                                                        | 18.5 | 18.1 | 17.8 | 17.0 | 19.2     | 18.7 | 18.1 | 17.6 | 17.0 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 16.7                                                                                      | 16.4 | 15.9 | 15.5 | 15.1 | 16.2                                                                                        | 16.0 | 15.9 | 15.7 | 15.0 | 16.4     | 15.9 | 15.5 | 14.9 | 14.5 | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 14.3                                                                                      | 14.1 | 13.8 | 13.4 | 13.1 | 14.4                                                                                        | 14.2 | 14.0 | 13.6 | 13.1 | 14.1     | 13.7 | 13.2 | 12.8 | 12.5 | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 12.5                                                                                      | 12.3 | 11.9 | 11.7 | 11.4 | 12.8                                                                                        | 12.5 | 12.1 | 11.9 | 11.4 | 12.1     | 11.9 | 11.4 | 11.0 | 10.6 | 104                                                                                 |
| 112                                                                                                                                                                                       |  | 8.7                                                                                       | 8.5  | 8.3  | 8.1  | 7.7  | 11.2                                                                                        | 10.9 | 10.5 | 10.3 | 10.1 | 10.5     | 10.3 | 9.8  | 9.6  | 9.2  | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 9.7                                                                                         | 9.6  | 9.4  | 9.0  | 8.8  | 9.2      | 8.9  | 8.6  | 8.3  | 7.9  | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 7.8                                                                                         | 7.7  | 7.4  | 7.2  | 6.9  | 7.8      | 7.7  | 7.4  | 7.0  | 6.8  | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 6.8      | 6.6  | 6.4  | 6.1  | 5.9  | 136                                                                                 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 4.9      | 4.9  | 4.7  | 4.4  | 4.2  | 144                                                                                 |
| 1)                                                                                                                                                                                        |  | 9.9                                                                                       | 9.9  | 9.7  | 9.7  | 9.5  | 8.8                                                                                         | 8.8  | 8.6  | 8.4  | 8.2  | 6.2      | 6.2  | 6.0  | 5.7  | 5.7  | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                     |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                  |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 36                                                                                                                                                                  |  | 50.4     | 44.9 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                  |
| 40                                                                                                                                                                  |  | 46.2     | 43.9 | 32.6 | 25.7 | 20.7 | 44.0     | 37.5 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                  |
| 48                                                                                                                                                                  |  | 38.3     | 37.6 | 32.6 | 24.9 | 20.7 | 37.1     | 35.6 | 26.7 | 20.1 | 15.7 | 33.3     | 27.6 | 20.5 | 15.2 | 11.2 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 31.3     | 30.6 | 29.6 | 24.9 | 20.1 | 30.4     | 29.5 | 26.3 | 20.1 | 15.7 | 29.5     | 25.9 | 20.5 | 15.2 | 11.2 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 25.3     | 24.8 | 24.1 | 22.8 | 19.6 | 25.4     | 24.8 | 23.0 | 19.9 | 15.7 | 24.5     | 23.3 | 20.5 | 15.2 | 11.2 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 21.5     | 21.5 | 20.8 | 19.2 | 17.9 | 21.0     | 20.4 | 19.7 | 18.8 | 15.7 | 20.2     | 19.5 | 18.6 | 15.2 | 11.2 | 72                                                                                  |
| 80                                                                                                                                                                  |  | 18.5     | 18.1 | 17.4 | 16.8 | 16.1 | 17.6     | 17.0 | 16.3 | 15.7 | 15.0 | 16.7     | 16.3 | 15.5 | 14.6 | 11.2 | 80                                                                                  |
| 88                                                                                                                                                                  |  | 15.7     | 15.3 | 14.8 | 14.2 | 13.6 | 14.8     | 14.4 | 13.7 | 13.1 | 12.5 | 14.0     | 13.5 | 12.9 | 12.1 | 10.8 | 88                                                                                  |
| 96                                                                                                                                                                  |  | 13.4     | 13.0 | 12.6 | 12.0 | 11.6 | 12.6     | 12.1 | 11.6 | 10.9 | 10.5 | 11.7     | 11.2 | 10.7 | 9.9  | 9.2  | 96                                                                                  |
| 104                                                                                                                                                                 |  | 11.5     | 11.2 | 10.8 | 10.3 | 9.9  | 10.6     | 10.2 | 9.7  | 9.2  | 8.6  | 9.7      | 9.3  | 8.6  | 8.1  | 7.5  | 104                                                                                 |
| 112                                                                                                                                                                 |  | 9.8      | 9.6  | 9.2  | 8.7  | 8.3  | 8.9      | 8.5  | 8.1  | 7.6  | 7.0  | 7.9      | 7.6  | 7.0  | 6.5  | 5.9  | 112                                                                                 |
| 120                                                                                                                                                                 |  | 8.4      | 8.1  | 7.8  | 7.4  | 7.0  | 7.4      | 7.0  | 6.5  | 6.1  | 5.6  | 6.5      | 6.1  | 5.6  | 5.0  | 4.5  | 120                                                                                 |
| 128                                                                                                                                                                 |  | 7.0      | 6.8  | 6.5  | 6.2  | 5.7  | 6.1      | 5.7  | 5.3  | 4.8  | 4.4  | 5.1      | 4.7  | 4.3  | 3.7  | 3.3  | 128                                                                                 |
| 136                                                                                                                                                                 |  | 6.0      | 5.8  | 5.3  | 5.1  | 4.8  | 4.9      | 4.7  | 4.2  | 3.8  | 3.5  | 4.0      | 3.5  | 3.1  | 2.8  | 2.4  | 136                                                                                 |
| 144                                                                                                                                                                 |  | 4.9      | 4.7  | 4.4  | 4.2  | 4.0  | 3.8      | 3.6  | 3.3  | 2.9  | 2.7  | 2.9      | 2.7  | 2.2  | -    | -    | 144                                                                                 |
| 152                                                                                                                                                                 |  | 2.8      | 2.8  | -    | -    | -    | 3.0      | 2.8  | -    | -    | -    | -        | -    | -    | -    | -    | 152                                                                                 |
| 1)                                                                                                                                                                  |  | 3.5      | 3.5  | 3.3  | 3.3  | 3.1  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

1) Capacities with horizontal boom

## HA

|  77,200 lb +  33,100 lb |  |  11.5 ft |       |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|                         |  | 42.3 ft                                                                                   |       |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°    | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
|                                                                                                                                                                                           |  | 1,000 lb                                                                                  |       |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 14                                                                                                                                                                                        |  | 208.3                                                                                     | 205.4 | 197.9 | 155.9 | 122.6 | 191.2                                                                                       | 188.6 | 180.4 | 146.1 | 116.3 | 173.9   | 171.3 | 165.7 | 135.7 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                                        |  | 169.8                                                                                     | 167.8 | 164.9 | 152.2 | 120.2 | 163.6                                                                                       | 161.3 | 157.9 | 142.8 | 114.2 | 150.3   | 148.0 | 144.7 | 132.9 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                                        |  | 141.5                                                                                     | 139.7 | 137.4 | 133.4 | 116.0 | 141.2                                                                                       | 139.3 | 136.5 | 129.8 | 112.0 | 133.0   | 130.9 | 127.9 | 122.4 | 105.8 | 18                                                                                  |
| 20                                                                                                                                                                                        |  | 117.2                                                                                     | 115.7 | 113.8 | 111.8 | 109.7 | 120.3                                                                                       | 118.8 | 116.6 | 114.2 | 108.3 | 119.6   | 118.8 | 116.3 | 113.3 | 102.9 | 20                                                                                  |
| 24                                                                                                                                                                                        |  | 88.2                                                                                      | 87.2  | 85.8  | 84.3  | 82.7  | 92.6                                                                                        | 91.4  | 89.8  | 88.1  | 86.5  | 93.8    | 92.6  | 90.9  | 89.0  | 87.1  | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 69.7                                                                                      | 68.8  | 67.8  | 66.6  | 65.4  | 73.6                                                                                        | 72.7  | 71.5  | 70.0  | 68.7  | 74.6    | 73.6  | 72.2  | 70.8  | 69.3  | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 56.8                                                                                      | 56.2  | 55.4  | 54.4  | 53.5  | 60.4                                                                                        | 59.7  | 58.5  | 57.4  | 56.4  | 61.2    | 60.5  | 59.4  | 58.1  | 56.9  | 32                                                                                  |
| 36                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | 51.3                                                                                        | 50.8  | 49.8  | 48.9  | 48.0  | 52.2    | 51.6  | 50.7  | 49.4  | 48.5  | 36                                                                                  |
| 40                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | 43.4                                                                                        | 43.0  | 42.2  | 41.5  | 40.7  | 45.4    | 44.8  | 43.9  | 43.0  | 42.2  | 40                                                                                  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 35.2    | 34.8  | 34.1  | 33.5  | 32.7  | 48                                                                                  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 28.1    | 27.8  | 27.3  | 26.6  | 26.2  | 56                                                                                  |
| 1)                                                                                                                                                                                        |  | 48.1                                                                                      | 48.1  | 48.1  | 48.1  | 48.1  | 33.3                                                                                        | 33.1  | 32.6  | 32.2  | 31.7  | 23.8    | 23.6  | 23.4  | 22.9  | 22.7  | 1)                                                                                  |

|   |  | 84.0 ft  |       |       |       |      | 98.1 ft |       |       |      |      | 111.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|-------|-------|-------|------|---------|-------|-------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°     | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°    | 2°    | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
|                                                                                                                                                                     |  | 1,000 lb |       |       |       |      |         |       |       |      |      |          |      |      |      |      |                                                                                     |
| 14                                                                                                                                                                  |  | 157.9    | 155.2 | 143.4 | -     | -    | -       | -     | -     | -    | -    | -        | -    | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 140.4    | 138.8 | 131.3 | 115.3 | -    | 130.6   | -     | -     | -    | -    | -        | -    | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 126.9    | 125.0 | 120.1 | 109.7 | 95.0 | 116.9   | 114.8 | 108.1 | -    | -    | 101.2    | -    | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 113.0    | 111.2 | 108.6 | 106.0 | 94.0 | 104.5   | 102.6 | 100.0 | 90.4 | 74.5 | 95.4     | 93.5 | 84.1 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 92.2     | 90.8  | 88.8  | 86.5  | 84.5 | 86.3    | 84.9  | 82.6  | 80.4 | 73.2 | 82.4     | 81.4 | 75.2 | 66.5 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 74.4     | 73.4  | 71.8  | 70.2  | 68.6 | 72.4    | 71.4  | 69.5  | 67.5 | 65.5 | 71.7     | 70.4 | 67.7 | 62.9 | 54.5 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 61.0     | 60.1  | 58.9  | 58.4  | 56.3 | 62.3    | 61.6  | 60.3  | 58.3 | 55.9 | 61.1     | 60.2 | 58.6 | 57.0 | 53.4 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 52.2     | 51.9  | 51.3  | 51.0  | 49.7 | 53.5    | 52.7  | 51.5  | 50.3 | 49.1 | 52.4     | 51.7 | 50.2 | 49.0 | 47.3 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 46.1     | 45.4  | 44.5  | 43.5  | 42.6 | 45.6    | 44.8  | 43.9  | 42.8 | 41.7 | 44.5     | 43.9 | 42.8 | 41.9 | 40.4 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 35.6     | 35.2  | 34.4  | 33.7  | 32.9 | 35.2    | 34.5  | 33.7  | 33.2 | 32.4 | 35.6     | 35.0 | 34.1 | 33.3 | 32.4 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 28.4     | 28.1  | 27.4  | 26.8  | 26.2 | 28.6    | 28.3  | 27.6  | 26.9 | 26.3 | 28.5     | 27.9 | 27.3 | 26.6 | 25.7 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 23.2     | 23.0  | 22.5  | 22.0  | 21.4 | 23.4    | 23.0  | 22.5  | 22.0 | 21.6 | 23.2     | 22.8 | 22.3 | 21.6 | 21.0 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 19.3     | 19.0  | 18.6  | 18.4  | 17.9 | 19.7    | 19.3  | 18.8  | 18.4 | 17.9 | 19.3     | 19.0 | 18.4 | 17.9 | 17.5 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -        | -     | -     | -     | -    | 16.6    | 16.4  | 15.9  | 15.5 | 15.3 | 16.3     | 15.9 | 15.5 | 15.1 | 14.6 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -        | -     | -     | -     | -    | 14.3    | 14.0  | 13.7  | 13.4 | 13.0 | 13.8     | 13.6 | 13.2 | 12.8 | 12.4 | 88                                                                                  |
| 96                                                                                                                                                                  |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 11.8     | 11.6 | 11.3 | 11.1 | 10.6 | 96                                                                                  |
| 104                                                                                                                                                                 |  | -        | -     | -     | -     | -    | -       | -     | -     | -    | -    | 10.1     | 10.1 | 9.9  | 9.5  | 9.2  | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 17.9     | 17.6  | 17.4  | 17.2  | 16.8 | 13.7    | 13.4  | 13.2  | 13.0 | 12.8 | 10.4     | 10.1 | 9.9  | 9.7  | 9.5  | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

|  77,200 lb +  33,100 lb |  |  11.5 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                        |  | 77.6                                                                                      | 76.0 | 67.3 | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 66.2                                                                                      | 64.8 | 62.8 | 52.9 | 42.8 | 62.9                                                                                        | 59.7 | 50.7 | -    | -    | -        | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 57.2                                                                                      | 56.2 | 54.1 | 51.2 | 42.8 | 55.6                                                                                        | 53.7 | 48.6 | 41.0 | -    | 53.0     | 49.6 | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 50.1                                                                                      | 49.8 | 47.3 | 45.8 | 41.1 | 49.1                                                                                        | 47.9 | 44.4 | 40.1 | 33.3 | 47.5     | 45.4 | 40.3 | 32.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 45.2                                                                                      | 44.3 | 43.0 | 40.8 | 38.5 | 43.0                                                                                        | 42.5 | 40.5 | 38.6 | 33.1 | 42.9     | 41.9 | 38.8 | 32.0 | 26.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 34.7                                                                                      | 34.1 | 33.2 | 32.8 | 31.2 | 34.7                                                                                        | 34.1 | 33.0 | 32.0 | 29.6 | 34.1     | 33.4 | 32.2 | 30.4 | 25.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 28.1                                                                                      | 27.6 | 26.7 | 26.0 | 25.3 | 27.6                                                                                        | 26.9 | 26.3 | 25.3 | 24.5 | 27.6     | 27.2 | 26.3 | 24.7 | 23.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 22.8                                                                                      | 22.4 | 21.8 | 21.2 | 20.5 | 22.9                                                                                        | 22.6 | 22.1 | 21.4 | 20.2 | 22.5     | 21.9 | 21.2 | 20.5 | 19.4 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 18.8                                                                                      | 18.6 | 17.9 | 17.5 | 16.8 | 19.0                                                                                        | 18.8 | 18.2 | 17.7 | 17.1 | 18.6     | 18.2 | 17.5 | 16.8 | 16.2 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 15.9                                                                                      | 15.5 | 15.1 | 14.6 | 14.2 | 16.1                                                                                        | 15.7 | 15.3 | 14.8 | 14.4 | 15.5     | 15.1 | 14.6 | 13.9 | 13.5 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 13.4                                                                                      | 13.2 | 12.7 | 12.4 | 11.9 | 13.6                                                                                        | 13.4 | 12.9 | 12.5 | 12.2 | 12.9     | 12.7 | 12.3 | 11.7 | 11.3 | 88                                                                                  |
| 96                                                                                                                                                                                        |  | 11.4                                                                                      | 11.2 | 10.9 | 10.5 | 10.2 | 11.6                                                                                        | 11.4 | 11.1 | 10.6 | 10.3 | 10.9     | 10.7 | 10.3 | 10.0 | 9.5  | 96                                                                                  |
| 104                                                                                                                                                                                       |  | 9.7                                                                                       | 9.6  | 9.2  | 9.0  | 8.8  | 9.9                                                                                         | 9.7  | 9.5  | 9.0  | 8.8  | 9.2      | 9.0  | 8.8  | 8.4  | 7.9  | 104                                                                                 |
| 112                                                                                                                                                                                       |  | 5.9                                                                                       | 5.9  | 5.5  | 5.2  | 5.0  | 8.5                                                                                         | 8.3  | 8.1  | 7.9  | 7.4  | 7.9      | 7.6  | 7.2  | 7.0  | 6.5  | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 7.2                                                                                         | 7.2  | 6.9  | 6.6  | 6.4  | 6.5      | 6.4  | 5.9  | 5.7  | 5.3  | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | 5.3                                                                                         | 5.2  | 5.0  | 4.7  | 4.5  | 5.3      | 5.3  | 5.0  | 4.6  | 4.4  | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 4.4      | 4.2  | 4.1  | 3.9  | 3.6  | 136                                                                                 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | 2.7      | 2.7  | 2.5  | 2.2  | -    | 144                                                                                 |
| 1)                                                                                                                                                                                        |  | 7.7                                                                                       | 7.5  | 7.3  | 7.3  | 7.1  | 6.4                                                                                         | 6.4  | 6.2  | 6.0  | 5.7  | 4.0      | 4.0  | 3.7  | 3.5  | 3.5  | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|--------------------------------------------------------------------------------------|
|                                                                                                                                                                       |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                      |
| ft                                                                                                                                                                    |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft                                                                                   |
| 36                                                                                                                                                                    |  | 45.2     | 41.3 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                   |
| 40                                                                                                                                                                    |  | 39.9     | 38.6 | 32.5 | 25.7 | 20.7 | 38.8     | 36.4 | 26.7 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                   |
| 48                                                                                                                                                                    |  | 32.9     | 32.4 | 29.5 | 24.9 | 20.7 | 31.3     | 30.1 | 25.9 | 20.1 | 15.7 | 28.9     | 26.9 | 20.5 | 15.2 | 11.2 | 48                                                                                   |
| 56                                                                                                                                                                    |  | 27.1     | 26.3 | 25.4 | 22.8 | 20.1 | 25.5     | 24.6 | 23.1 | 20.1 | 15.7 | 23.5     | 22.5 | 19.9 | 15.2 | 11.2 | 56                                                                                   |
| 64                                                                                                                                                                    |  | 21.9     | 21.2 | 20.5 | 19.5 | 18.5 | 20.8     | 20.2 | 19.1 | 17.9 | 15.7 | 19.1     | 18.2 | 17.1 | 15.2 | 11.2 | 64                                                                                   |
| 72                                                                                                                                                                    |  | 17.9     | 17.3 | 16.6 | 16.0 | 15.3 | 16.8     | 16.4 | 15.5 | 14.6 | 13.7 | 15.5     | 14.8 | 13.7 | 12.6 | 11.2 | 72                                                                                   |
| 80                                                                                                                                                                    |  | 14.8     | 14.4 | 13.7 | 13.3 | 12.6 | 13.9     | 13.5 | 12.8 | 12.0 | 11.1 | 12.6     | 12.0 | 11.1 | 10.2 | 9.1  | 80                                                                                   |
| 88                                                                                                                                                                    |  | 12.5     | 12.1 | 11.5 | 11.0 | 10.4 | 11.5     | 11.2 | 10.5 | 9.7  | 9.0  | 10.3     | 9.6  | 8.8  | 8.0  | 7.1  | 88                                                                                   |
| 96                                                                                                                                                                    |  | 10.5     | 10.1 | 9.6  | 9.1  | 8.6  | 9.4      | 9.0  | 8.5  | 7.8  | 7.1  | 8.3      | 7.6  | 7.0  | 6.2  | 5.3  | 96                                                                                   |
| 104                                                                                                                                                                   |  | 8.6      | 8.4  | 7.9  | 7.5  | 7.0  | 7.7      | 7.3  | 6.6  | 6.2  | 5.7  | 6.6      | 5.9  | 5.3  | 4.6  | 3.9  | 104                                                                                  |
| 112                                                                                                                                                                   |  | 7.2      | 6.8  | 6.3  | 5.9  | 5.5  | 6.1      | 5.7  | 5.2  | 4.8  | 4.3  | 5.0      | 4.6  | 3.9  | 3.2  | -    | 112                                                                                  |
| 120                                                                                                                                                                   |  | 5.7      | 5.5  | 5.0  | 4.8  | 4.4  | 4.8      | 4.4  | 3.9  | 3.5  | 3.1  | 3.7      | 3.3  | -    | -    | -    | 120                                                                                  |
| 128                                                                                                                                                                   |  | 4.6      | 4.4  | 4.0  | 3.7  | 3.4  | 3.5      | 3.3  | 2.9  | -    | -    | 2.6      | -    | -    | -    | -    | 128                                                                                  |
| 136                                                                                                                                                                   |  | 3.5      | 3.3  | 3.0  | 2.8  | 2.6  | 2.4      | -    | -    | -    | -    | -        | -    | -    | -    | -    | 136                                                                                  |
| 144                                                                                                                                                                   |  | 2.7      | 2.5  | 2.2  | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 144                                                                                  |
| 1)                                                                                                                                                                    |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                   |

1) Capacities with horizontal boom

## HA

|  55,100 lb +  33,100 lb |  |  11.5 ft |       |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|                         |  | 42.3 ft                                                                                   |       |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°    | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
| 1,000 lb                                                                                                                                                                                  |  |                                                                                           |       |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 10                                                                                                                                                                                        |  | 268.6                                                                                     | 265.3 | 218.9 | 163.5 | 127.9 | 234.5                                                                                       | 230.0 | 199.0 | 152.7 | 121.1 | 208.4   | 205.1 | 181.0 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                                        |  | 212.5                                                                                     | 209.4 | 203.9 | 159.5 | 125.2 | 191.9                                                                                       | 189.1 | 184.7 | 149.3 | 118.6 | 172.0   | 169.1 | 165.1 | 138.6 | -     | 12                                                                                  |
| 14                                                                                                                                                                                        |  | 173.9                                                                                     | 171.5 | 167.9 | 154.8 | 122.6 | 160.1                                                                                       | 157.7 | 154.1 | 144.0 | 116.3 | 145.4   | 143.1 | 139.5 | 132.0 | 110.0 | 14                                                                                  |
| 16                                                                                                                                                                                        |  | 141.8                                                                                     | 139.9 | 137.1 | 134.3 | 120.2 | 136.4                                                                                       | 134.4 | 131.4 | 128.4 | 114.2 | 128.2   | 126.9 | 124.2 | 118.8 | 107.8 | 16                                                                                  |
| 18                                                                                                                                                                                        |  | 117.9                                                                                     | 116.3 | 114.0 | 111.8 | 106.4 | 117.7                                                                                       | 115.9 | 113.5 | 110.9 | 104.4 | 114.1   | 112.4 | 109.8 | 107.1 | 100.6 | 18                                                                                  |
| 20                                                                                                                                                                                        |  | 97.3                                                                                      | 96.0  | 94.1  | 92.3  | 90.4  | 102.1                                                                                       | 100.8 | 98.9  | 96.7  | 94.8  | 100.5   | 98.9  | 96.6  | 94.2  | 91.8  | 20                                                                                  |
| 24                                                                                                                                                                                        |  | 72.7                                                                                      | 71.9  | 70.4  | 69.0  | 67.6  | 77.1                                                                                        | 76.0  | 74.6  | 73.1  | 71.4  | 78.3    | 77.1  | 75.4  | 73.8  | 72.1  | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 57.0                                                                                      | 56.3  | 55.2  | 54.2  | 53.0  | 60.9                                                                                        | 60.1  | 58.9  | 57.7  | 56.4  | 62.0    | 61.0  | 59.7  | 58.4  | 57.0  | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 46.0                                                                                      | 45.5  | 44.8  | 44.0  | 43.0  | 49.6                                                                                        | 49.0  | 48.0  | 46.9  | 46.0  | 51.5    | 50.9  | 49.8  | 48.9  | 47.8  | 32                                                                                  |
| 36                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | 42.0                                                                                        | 41.5  | 40.6  | 39.7  | 38.9  | 43.9    | 43.4  | 42.6  | 41.7  | 40.8  | 36                                                                                  |
| 40                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | 35.4                                                                                        | 35.0  | 34.1  | 33.5  | 32.8  | 37.4    | 37.0  | 36.1  | 35.2  | 34.6  | 40                                                                                  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 28.6    | 28.2  | 27.6  | 27.0  | 26.4  | 48                                                                                  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 22.5    | 22.2  | 21.7  | 21.2  | 20.8  | 56                                                                                  |
| 1)                                                                                                                                                                                        |  | 41.9                                                                                      | 41.4  | 40.8  | 40.3  | 39.7  | 26.7                                                                                        | 26.5  | 26.0  | 25.8  | 25.4  | 19.0    | 18.7  | 18.5  | 18.1  | 17.9  | 1)                                                                                  |

|   |  | 84.0 ft |       |       |       |      | 98.1 ft |      |      |      |      | 111.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|-------|-------|-------|------|---------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°    | 1°    | 2°    | 3°    | 4°   | 0,3°    | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |         |       |       |       |      |         |      |      |      |      |          |      |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 155.0   | -     | -     | -     | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 136.8   | 134.4 | 128.5 | -     | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 119.1   | 117.0 | 114.0 | 108.0 | -    | 108.7   | 95.2 | -    | -    | -    | -        | -    | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 105.9   | 104.0 | 101.4 | 98.0  | 89.4 | 97.0    | 95.2 | 92.1 | -    | -    | 92.6     | -    | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 94.0    | 92.3  | 89.9  | 87.5  | 84.9 | 86.5    | 86.5 | 82.3 | 79.5 | 73.7 | 83.7     | 82.2 | 75.7 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 76.4    | 75.2  | 73.1  | 71.3  | 69.3 | 74.9    | 73.5 | 71.5 | 65.9 | 63.2 | 69.5     | 68.2 | 66.1 | 62.9 | 55.5 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 62.9    | 62.3  | 61.4  | 59.9  | 56.8 | 62.6    | 61.5 | 59.9 | 58.4 | 55.8 | 58.9     | 58.2 | 55.9 | 54.0 | 51.7 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 52.3    | 51.6  | 50.5  | 49.1  | 48.0 | 51.9    | 51.0 | 49.8 | 48.5 | 47.1 | 51.6     | 50.7 | 48.4 | 46.2 | 44.6 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 44.7    | 44.0  | 43.0  | 41.9  | 40.9 | 44.1    | 43.4 | 42.3 | 41.2 | 40.0 | 44.7     | 43.8 | 42.4 | 40.2 | 38.3 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 37.8    | 37.4  | 36.5  | 35.5  | 34.6 | 38.3    | 37.6 | 36.5 | 35.7 | 34.8 | 38.0     | 37.4 | 36.3 | 35.0 | 34.1 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 29.1    | 28.5  | 27.8  | 27.2  | 26.4 | 29.5    | 28.9 | 28.2 | 27.4 | 26.6 | 29.1     | 28.5 | 27.7 | 26.9 | 26.1 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 22.9    | 22.5  | 21.9  | 21.5  | 20.8 | 23.3    | 22.9 | 22.2 | 21.7 | 21.0 | 22.9     | 22.5 | 21.8 | 21.0 | 20.5 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 18.5    | 18.2  | 17.7  | 17.3  | 16.8 | 18.9    | 18.5 | 18.0 | 17.5 | 16.9 | 18.5     | 18.0 | 17.5 | 16.9 | 16.4 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 15.1    | 14.8  | 14.6  | 14.2  | 13.7 | 15.5    | 15.1 | 14.6 | 14.4 | 13.9 | 15.1     | 14.8 | 14.4 | 13.7 | 13.3 | 72                                                                                  |
| 80                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 12.9    | 12.7 | 12.3 | 12.0 | 11.6 | 12.4     | 12.2 | 11.8 | 11.4 | 10.9 | 80                                                                                  |
| 88                                                                                                                                                                  |  | -       | -     | -     | -     | -    | 10.8    | 10.6 | 10.4 | 10.0 | 9.8  | 10.4     | 10.2 | 9.8  | 9.6  | 9.2  | 88                                                                                  |
| 96                                                                                                                                                                  |  | -       | -     | -     | -     | -    | -       | -    | -    | -    | -    | 8.8      | 8.6  | 8.3  | 8.0  | 7.7  | 96                                                                                  |
| 104                                                                                                                                                                 |  | -       | -     | -     | -     | -    | -       | -    | -    | -    | -    | 7.4      | 7.2  | 7.0  | 6.6  | 6.3  | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 13.9    | 13.7  | 13.4  | 13.2  | 13.0 | 10.4    | 10.1 | 10.1 | 9.9  | 9.7  | 7.5      | 7.3  | 7.1  | 6.8  | 6.6  | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

|  55,100 lb +  33,100 lb |          |  11.5 ft |      |      |      |          |  32.2 ft/s |      |      |      |          | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|------|------|----------|---------------------------------------------------------------------------------------------|------|------|------|----------|------|------|------------|------|-------------------------------------------------------------------------------------|
| <br>                    | 126.0 ft |                                                                                           |      |      |      | 134.8 ft |                                                                                             |      |      |      | 148.6 ft |      |      |            |      |  |
|                                                                                                                                                                                           | 0,3°     | 1°                                                                                        | 2°   | 3°   | 4°   | 0,3°     | 1°                                                                                          | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°         | 4°   |                                                                                     |
| ft                                                                                                                                                                                        | 1,000 lb |                                                                                           |      |      |      |          |                                                                                             |      |      |      |          |      |      |            |      | ft                                                                                  |
| 24                                                                                                                                                                                        | 65.7     | 63.9                                                                                      | 59.8 | -    | -    | 54.8     | -                                                                                           | -    | -    | -    | -        | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        | 57.0     | 55.8                                                                                      | 51.6 | 48.6 | 42.8 | 54.7     | 52.2                                                                                        | 47.2 | -    | -    | 50.5     | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        | 49.1     | 48.6                                                                                      | 46.3 | 43.5 | 40.3 | 47.3     | 46.1                                                                                        | 43.6 | 39.3 | -    | 45.9     | 43.4 | -    | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        | 43.3     | 42.7                                                                                      | 40.9 | 39.0 | 36.2 | 41.7     | 40.6                                                                                        | 39.1 | 35.8 | 32.1 | 40.9     | 38.9 | 36.5 | 31.5       | -    | 36                                                                                  |
| 40                                                                                                                                                                                        | 37.6     | 36.7                                                                                      | 35.7 | 34.6 | 32.9 | 36.6     | 36.0                                                                                        | 34.2 | 32.9 | 31.4 | 36.0     | 34.9 | 33.2 | 30.5       | 25.8 | 40                                                                                  |
| 48                                                                                                                                                                                        | 28.6     | 28.0                                                                                      | 27.1 | 26.3 | 25.5 | 29.1     | 28.4                                                                                        | 27.4 | 26.6 | 24.6 | 28.2     | 27.6 | 26.6 | 25.4       | 22.8 | 48                                                                                  |
| 56                                                                                                                                                                                        | 22.5     | 22.0                                                                                      | 21.2 | 20.6 | 19.8 | 22.9     | 22.2                                                                                        | 21.6 | 20.8 | 20.0 | 22.2     | 21.6 | 20.8 | 19.9       | 19.2 | 56                                                                                  |
| 64                                                                                                                                                                                        | 18.0     | 17.6                                                                                      | 17.1 | 16.4 | 15.8 | 18.5     | 18.0                                                                                        | 17.3 | 16.6 | 16.0 | 17.8     | 17.1 | 16.5 | 15.8       | 15.1 | 64                                                                                  |
| 72                                                                                                                                                                                        | 14.6     | 14.4                                                                                      | 13.7 | 13.3 | 12.8 | 14.8     | 14.6                                                                                        | 14.0 | 13.5 | 13.1 | 14.4     | 14.0 | 13.3 | 12.6       | 12.2 | 72                                                                                  |
| 80                                                                                                                                                                                        | 12.0     | 11.8                                                                                      | 11.3 | 10.9 | 10.5 | 12.4     | 12.0                                                                                        | 11.6 | 11.1 | 10.7 | 11.8     | 11.3 | 10.9 | 10.3       | 9.8  | 80                                                                                  |
| 88                                                                                                                                                                                        | 10.0     | 9.7                                                                                       | 9.4  | 9.1  | 8.6  | 10.3     | 9.9                                                                                         | 9.6  | 9.2  | 8.7  | 9.7      | 9.3  | 8.8  | 8.4        | 8.0  | 88                                                                                  |
| 96                                                                                                                                                                                        | 8.4      | 8.1                                                                                       | 7.8  | 7.3  | 7.0  | 8.6      | 8.3                                                                                         | 8.0  | 7.5  | 7.2  | 7.8      | 7.5  | 7.1  | 6.7        | 6.2  | 96                                                                                  |
| 104                                                                                                                                                                                       | 6.8      | 6.6                                                                                       | 6.3  | 5.9  | 5.7  | 7.0      | 6.8                                                                                         | 6.6  | 6.1  | 5.9  | 6.3      | 5.9  | 5.7  | 5.2        | 4.8  | 104                                                                                 |
| 112                                                                                                                                                                                       | 3.0      | 2.8                                                                                       | -    | -    | -    | 5.7      | 5.5                                                                                         | 5.2  | 5.0  | 4.6  | 5.0      | 4.8  | 4.3  | 3.9        | 3.7  | 112                                                                                 |
| 120                                                                                                                                                                                       | -        | -                                                                                         | -    | -    | -    | 4.6      | 4.4                                                                                         | 4.2  | 4.0  | 3.8  | 3.8      | 3.6  | 3.3  | 3.1        | 2.7  | 120                                                                                 |
| 128                                                                                                                                                                                       | -        | -                                                                                         | -    | -    | -    | 2.8      | 2.6                                                                                         | 2.4  | -    | -    | 2.9      | 2.6  | -    | -          | -    | 128                                                                                 |
| 1)                                                                                                                                                                                        | 4.9      | 4.9                                                                                       | 4.6  | 4.4  | 4.2  | 4.0      | 3.7                                                                                         | 3.5  | 3.5  | 3.3  | -        | -    | -    | -          | -    | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |          |      |      |      |      |          |      |      |      |      |          |      |      |      |      |                                                                                     |
| 36                                                                                                                                                                  |  | 38.0     | 36.5 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 36                                                                                  |
| 40                                                                                                                                                                  |  | 33.4     | 32.3 | 31.0 | 25.7 | 20.7 | 30.8     | 29.5 | 26.3 | 20.1 | -    | -        | -    | -    | -    | -    | 40                                                                                  |
| 48                                                                                                                                                                  |  | 26.5     | 25.7 | 24.4 | 23.2 | 20.2 | 24.2     | 23.2 | 21.8 | 19.4 | 15.7 | 22.0     | 20.9 | 19.3 | 15.2 | 11.2 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 21.2     | 20.6 | 19.5 | 18.4 | 17.4 | 19.3     | 18.4 | 17.2 | 16.1 | 14.5 | 17.3     | 16.3 | 15.1 | 13.7 | 11.2 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 17.1     | 16.5 | 15.7 | 14.8 | 13.9 | 15.3     | 14.6 | 13.7 | 12.6 | 11.5 | 13.5     | 12.8 | 11.7 | 10.5 | 9.4  | 64                                                                                  |
| 72                                                                                                                                                                  |  | 13.7     | 13.3 | 12.6 | 11.7 | 11.1 | 12.2     | 11.5 | 10.6 | 9.8  | 8.9  | 10.6     | 9.8  | 8.9  | 7.8  | 6.9  | 72                                                                                  |
| 80                                                                                                                                                                  |  | 11.1     | 10.7 | 10.1 | 9.4  | 8.7  | 9.8      | 9.1  | 8.3  | 7.4  | 6.8  | 8.1      | 7.6  | 6.5  | 5.7  | 4.8  | 80                                                                                  |
| 88                                                                                                                                                                  |  | 9.0      | 8.6  | 8.1  | 7.5  | 6.9  | 7.7      | 7.1  | 6.4  | 5.6  | 5.0  | 6.2      | 5.5  | 4.7  | 3.9  | 3.2  | 88                                                                                  |
| 96                                                                                                                                                                  |  | 7.1      | 6.7  | 6.2  | 5.8  | 5.3  | 5.8      | 5.3  | 4.7  | 4.0  | 3.5  | 4.5      | 3.9  | 3.1  | -    | -    | 96                                                                                  |
| 104                                                                                                                                                                 |  | 5.5      | 5.2  | 4.8  | 4.4  | 3.9  | 4.4      | 3.9  | 3.3  | 2.8  | -    | 3.0      | 2.4  | -    | -    | -    | 104                                                                                 |
| 112                                                                                                                                                                 |  | 4.1      | 3.9  | 3.5  | 3.0  | -    | 3.0      | -    | -    | -    | -    | -        | -    | -    | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                 |  | 3.1      | 2.8  | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 120                                                                                 |
| 1)                                                                                                                                                                  |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

1) Capacities with horizontal boom





## HA

|  33,100 lb +  33,100 lb |  |  11.5 ft |       |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |       | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
|                         |  | 42.3 ft                                                                                   |       |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |       |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°    | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°    | ft                                                                                  |
|                                                                                                                                                                                           |  | 1,000 lb                                                                                  |       |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |       |                                                                                     |
| 10                                                                                                                                                                                        |  | 217.6                                                                                     | 214.6 | 209.6 | 163.5 | 127.9 | 192.6                                                                                       | 189.4 | 184.6 | 152.7 | 121.1 | 169.0   | 165.9 | 161.2 | -     | -     | 10                                                                                  |
| 12                                                                                                                                                                                        |  | 171.3                                                                                     | 168.6 | 164.6 | 154.5 | 125.2 | 155.3                                                                                       | 152.6 | 148.8 | 143.6 | 118.6 | 143.1   | 140.8 | 137.0 | 127.8 | -     | 12                                                                                  |
| 14                                                                                                                                                                                        |  | 139.6                                                                                     | 137.3 | 134.1 | 130.6 | 120.6 | 129.0                                                                                       | 126.8 | 124.4 | 120.6 | 112.9 | 121.1   | 118.8 | 115.8 | 112.5 | 106.5 | 14                                                                                  |
| 16                                                                                                                                                                                        |  | 114.1                                                                                     | 112.4 | 109.9 | 107.2 | 104.6 | 112.0                                                                                       | 110.2 | 107.5 | 104.8 | 101.9 | 104.1   | 102.2 | 99.5  | 96.8  | 94.1  | 16                                                                                  |
| 18                                                                                                                                                                                        |  | 94.8                                                                                      | 93.3  | 91.2  | 89.1  | 87.0  | 96.8                                                                                        | 95.2  | 93.0  | 90.7  | 88.4  | 91.8    | 90.1  | 87.7  | 85.2  | 82.8  | 18                                                                                  |
| 20                                                                                                                                                                                        |  | 77.9                                                                                      | 76.5  | 74.8  | 73.1  | 71.4  | 82.7                                                                                        | 81.4  | 79.6  | 77.7  | 75.8  | 80.6    | 79.1  | 76.9  | 74.8  | 72.6  | 20                                                                                  |
| 24                                                                                                                                                                                        |  | 57.6                                                                                      | 56.7  | 55.4  | 54.1  | 52.9  | 62.0                                                                                        | 60.9  | 59.5  | 58.0  | 56.7  | 63.9    | 63.3  | 61.8  | 60.3  | 58.7  | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 44.6                                                                                      | 43.9  | 42.9  | 41.9  | 41.0  | 48.5                                                                                        | 47.8  | 46.7  | 45.5  | 44.4  | 51.1    | 50.3  | 49.0  | 47.7  | 46.5  | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 35.6                                                                                      | 35.1  | 34.4  | 33.7  | 32.9  | 39.2                                                                                        | 38.5  | 37.6  | 36.6  | 35.7  | 41.6    | 40.9  | 39.8  | 38.8  | 37.7  | 32                                                                                  |
| 36                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | 32.9                                                                                        | 32.3  | 31.5  | 30.8  | 30.0  | 35.2    | 34.5  | 33.6  | 32.8  | 31.9  | 36                                                                                  |
| 40                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | 27.4                                                                                        | 27.0  | 26.3  | 25.7  | 25.0  | 29.6    | 28.9  | 28.3  | 27.4  | 26.8  | 40                                                                                  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 22.1    | 21.7  | 21.1  | 20.7  | 20.1  | 48                                                                                  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 17.1    | 16.8  | 16.3  | 16.0  | 15.5  | 56                                                                                  |
| 1)                                                                                                                                                                                        |  | 32.2                                                                                      | 31.7  | 31.3  | 30.9  | 30.2  | 20.3                                                                                        | 20.1  | 19.6  | 19.4  | 19.0  | 14.1    | 13.9  | 13.7  | 13.4  | 13.2  | 1)                                                                                  |

|   |  | 84.0 ft  |       |       |      |      | 98.1 ft |      |      |      |      | 111.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|-------|-------|------|------|---------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°     | 1°    | 2°    | 3°   | 4°   | 0,3°    | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
|                                                                                                                                                                     |  | 1,000 lb |       |       |      |      |         |      |      |      |      |          |      |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 129.3    | -     | -     | -    | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 110.3    | 108.2 | 105.0 | -    | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 95.7     | 93.9  | 91.0  | 88.3 | -    | 91.2    | 89.2 | -    | -    | -    | -        | -    | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 84.8     | 83.8  | 80.6  | 78.2 | 75.3 | 81.5    | 79.7 | 75.8 | -    | -    | 74.7     | -    | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 77.9     | 76.4  | 74.3  | 70.3 | 66.6 | 72.6    | 71.0 | 68.8 | 66.7 | 61.5 | 69.1     | 67.4 | 62.8 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 63.3     | 62.3  | 60.4  | 58.8 | 57.0 | 59.6    | 59.1 | 56.4 | 54.5 | 52.7 | 57.2     | 55.9 | 52.2 | 49.5 | 47.6 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 51.5     | 50.7  | 49.3  | 47.9 | 46.6 | 51.0    | 50.0 | 48.5 | 45.5 | 44.0 | 48.3     | 47.1 | 45.4 | 43.2 | 40.2 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 42.0     | 41.4  | 40.2  | 39.1 | 37.9 | 42.3    | 41.6 | 40.4 | 39.1 | 37.5 | 41.2     | 40.3 | 38.9 | 37.3 | 36.0 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 35.5     | 35.0  | 34.0  | 33.0 | 32.1 | 36.1    | 35.4 | 34.3 | 33.1 | 32.1 | 35.3     | 34.5 | 33.4 | 32.1 | 31.0 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 29.8     | 29.4  | 28.5  | 27.6 | 27.0 | 30.5    | 29.8 | 28.9 | 28.1 | 27.0 | 30.0     | 29.4 | 28.3 | 27.4 | 26.3 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 22.6     | 22.1  | 21.5  | 20.9 | 20.1 | 23.0    | 22.6 | 21.8 | 21.1 | 20.3 | 22.6     | 22.1 | 21.3 | 20.5 | 19.8 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 17.5     | 17.1  | 16.5  | 16.1 | 15.5 | 17.8    | 17.5 | 16.9 | 16.3 | 15.8 | 17.5     | 17.1 | 16.4 | 15.9 | 15.1 | 56                                                                                  |
| 64                                                                                                                                                                  |  | 13.7     | 13.4  | 13.0  | 12.7 | 12.3 | 14.1    | 13.9 | 13.4 | 12.8 | 12.3 | 13.7     | 13.4 | 12.9 | 12.3 | 11.8 | 64                                                                                  |
| 72                                                                                                                                                                  |  | 11.1     | 10.9  | 10.4  | 10.2 | 9.8  | 11.3    | 11.1 | 10.6 | 10.2 | 10.0 | 11.1     | 10.6 | 10.2 | 9.8  | 9.3  | 72                                                                                  |
| 80                                                                                                                                                                  |  | -        | -     | -     | -    | -    | 9.2     | 9.0  | 8.6  | 8.3  | 7.9  | 8.8      | 8.5  | 8.1  | 7.9  | 7.4  | 80                                                                                  |
| 88                                                                                                                                                                  |  | -        | -     | -     | -    | -    | 7.4     | 7.3  | 7.0  | 6.7  | 6.4  | 7.1      | 6.7  | 6.5  | 6.1  | 5.7  | 88                                                                                  |
| 96                                                                                                                                                                  |  | -        | -     | -     | -    | -    | -       | -    | -    | -    | -    | 5.5      | 5.3  | 5.0  | 4.6  | 4.4  | 96                                                                                  |
| 104                                                                                                                                                                 |  | -        | -     | -     | -    | -    | -       | -    | -    | -    | -    | 4.3      | 4.1  | 3.9  | 3.6  | 3.4  | 104                                                                                 |
| 1)                                                                                                                                                                  |  | 9.9      | 9.9   | 9.7   | 9.5  | 9.3  | 7.1     | 6.8  | 6.8  | 6.6  | 6.4  | 4.2      | 4.2  | 4.0  | 3.7  | 3.7  | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

|  33,100 lb +  33,100 lb |          |      |      |      |      |  11.5 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°                                                                                |  |  |  |  | ASME B30.5 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|------|------|------|-------------------------------------------------------------------------------------------|------|------|------|------|----------------------------------------------------------------------------------------------|------|------|------|------|-------------------------------------------------------------------------------------|--|--|--|--|------------|
|                         | 126.0 ft |      |      |      |      | 134.8 ft                                                                                  |      |      |      |      | 148.6 ft                                                                                     |      |      |      |      |  |  |  |  |  |            |
|                                                                                                                                                                                           | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                         | 1°   | 2°   | 3°   | 4°   |                                                                                     |  |  |  |  |            |
| ft                                                                                                                                                                                        | 1,000 lb |      |      |      |      |                                                                                           |      |      |      |      |                                                                                              |      |      |      |      | ft                                                                                  |  |  |  |  |            |
| 24                                                                                                                                                                                        | 53.9     | 52.6 | 49.6 | -    | -    | 52.7                                                                                      | -    | -    | -    | -    | -                                                                                            | -    | -    | -    | -    | 24                                                                                  |  |  |  |  |            |
| 28                                                                                                                                                                                        | 45.5     | 44.4 | 42.7 | 40.1 | 37.9 | 44.8                                                                                      | 43.6 | 39.7 | -    | -    | 41.7                                                                                         | -    | -    | -    | -    | 28                                                                                  |  |  |  |  |            |
| 32                                                                                                                                                                                        | 39.1     | 38.0 | 36.5 | 35.0 | 33.3 | 38.5                                                                                      | 37.5 | 35.9 | 33.3 | 27.1 | 35.9                                                                                         | 34.8 | 33.2 | -    | -    | 32                                                                                  |  |  |  |  |            |
| 36                                                                                                                                                                                        | 34.2     | 33.2 | 31.7 | 30.5 | 29.1 | 33.7                                                                                      | 32.8 | 31.4 | 29.9 | 26.7 | 31.4                                                                                         | 30.4 | 29.0 | 27.5 | 24.3 | 36                                                                                  |  |  |  |  |            |
| 40                                                                                                                                                                                        | 29.6     | 28.7 | 27.4 | 26.4 | 25.1 | 29.4                                                                                      | 28.6 | 27.3 | 26.0 | 24.9 | 27.3                                                                                         | 26.4 | 25.1 | 23.8 | 22.5 | 40                                                                                  |  |  |  |  |            |
| 48                                                                                                                                                                                        | 22.1     | 21.5 | 20.8 | 20.0 | 19.2 | 22.5                                                                                      | 21.9 | 21.1 | 20.2 | 19.3 | 21.2                                                                                         | 20.6 | 19.3 | 18.2 | 17.2 | 48                                                                                  |  |  |  |  |            |
| 56                                                                                                                                                                                        | 17.1     | 16.6 | 15.9 | 15.2 | 14.5 | 17.3                                                                                      | 16.9 | 16.2 | 15.4 | 14.8 | 16.6                                                                                         | 16.1 | 15.1 | 14.1 | 13.2 | 56                                                                                  |  |  |  |  |            |
| 64                                                                                                                                                                                        | 13.4     | 13.0 | 12.3 | 11.8 | 11.2 | 13.7                                                                                      | 13.2 | 12.7 | 12.1 | 11.4 | 13.0                                                                                         | 12.6 | 11.8 | 11.0 | 10.2 | 64                                                                                  |  |  |  |  |            |
| 72                                                                                                                                                                                        | 10.6     | 10.2 | 9.8  | 9.3  | 8.9  | 10.9                                                                                      | 10.4 | 10.0 | 9.5  | 9.1  | 10.2                                                                                         | 9.8  | 9.3  | 8.4  | 7.8  | 72                                                                                  |  |  |  |  |            |
| 80                                                                                                                                                                                        | 8.5      | 8.1  | 7.6  | 7.2  | 6.8  | 8.7                                                                                       | 8.3  | 7.9  | 7.4  | 7.0  | 8.0                                                                                          | 7.6  | 7.2  | 6.5  | 5.9  | 80                                                                                  |  |  |  |  |            |
| 88                                                                                                                                                                                        | 6.5      | 6.3  | 5.8  | 5.4  | 5.1  | 6.9                                                                                       | 6.5  | 6.1  | 5.6  | 5.3  | 6.1                                                                                          | 5.8  | 5.2  | 4.7  | 4.3  | 88                                                                                  |  |  |  |  |            |
| 96                                                                                                                                                                                        | 5.0      | 4.8  | 4.4  | 4.1  | 3.7  | 5.3                                                                                       | 5.0  | 4.6  | 4.3  | 3.9  | 4.5                                                                                          | 4.2  | 3.7  | 3.3  | 3.0  | 96                                                                                  |  |  |  |  |            |
| 104                                                                                                                                                                                       | 3.7      | 3.5  | 3.2  | 3.0  | 2.6  | 3.9                                                                                       | 3.7  | 3.4  | 3.0  | 2.8  | 3.2                                                                                          | 2.8  | 2.6  | -    | -    | 104                                                                                 |  |  |  |  |            |
| 112                                                                                                                                                                                       | -        | -    | -    | -    | -    | 2.8                                                                                       | -    | -    | -    | -    | -                                                                                            | -    | -    | -    | -    | 112                                                                                 |  |  |  |  |            |
| 1)                                                                                                                                                                                        | 2.2      | -    | -    | -    | -    | -                                                                                         | -    | -    | -    | -    | -                                                                                            | -    | -    | -    | -    | 1)                                                                                  |  |  |  |  |            |

|  |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |      | 196.9 ft |      |      |      |     |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|-----|-------------------------------------------------------------------------------------|
|                                                                                   |                                                                                   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°  |                                                                                     |
| ft                                                                                |                                                                                   | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |     | ft                                                                                  |
| 36                                                                                |                                                                                   | 28.7     | 27.8 | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -   | 36                                                                                  |
| 40                                                                                |                                                                                   | 24.9     | 24.0 | 22.5 | 21.2 | 19.7 | 22.5     | 21.4 | 19.9 | 18.3 | -    | -        | -    | -    | -    | -   | 40                                                                                  |
| 48                                                                                |                                                                                   | 19.3     | 18.4 | 17.3 | 16.1 | 14.8 | 17.1     | 16.1 | 14.8 | 13.5 | 12.3 | 15.1     | 14.2 | 12.7 | 11.4 | 9.9 | 48                                                                                  |
| 56                                                                                |                                                                                   | 15.1     | 14.2 | 13.2 | 12.3 | 11.2 | 13.0     | 12.1 | 11.0 | 9.9  | 8.8  | 11.3     | 10.4 | 9.2  | 8.0  | 6.6 | 56                                                                                  |
| 64                                                                                |                                                                                   | 11.7     | 11.0 | 10.1 | 9.2  | 8.3  | 9.9      | 9.1  | 8.0  | 7.2  | 6.2  | 8.1      | 7.4  | 6.3  | 5.2  | 4.2 | 64                                                                                  |
| 72                                                                                |                                                                                   | 8.9      | 8.4  | 7.5  | 6.9  | 6.0  | 7.1      | 6.7  | 5.8  | 4.9  | 4.0  | 5.6      | 4.9  | 4.0  | 3.1  | -   | 72                                                                                  |
| 80                                                                                |                                                                                   | 6.8      | 6.3  | 5.7  | 5.0  | 4.2  | 5.2      | 4.6  | 3.9  | -    | -    | 3.7      | -    | -    | -    | -   | 80                                                                                  |
| 88                                                                                |                                                                                   | 5.0      | 4.6  | 4.0  | 3.3  | -    | 3.4      | 3.0  | -    | -    | -    | -        | -    | -    | -    | -   | 88                                                                                  |
| 96                                                                                |                                                                                   | 3.5      | 3.3  | 2.6  | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -   | 96                                                                                  |
| 104                                                                               |                                                                                   | 2.3      | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -   | 104                                                                                 |
| 1)                                                                                |                                                                                   | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -   | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

|  11,000 lb +  33,100 lb |  |  11.5 ft |       |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |       |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|-------|------|-------------------------------------------------------------------------------------|
|                         |  | 42.3 ft                                                                                   |       |       |       |       | 56.1 ft                                                                                     |       |       |       |       | 70.2 ft |       |       |       |      |  |
| ft                                                                                                                                                                                        |  | 0,3°                                                                                      | 1°    | 2°    | 3°    | 4°    | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°    | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                                                  |  |                                                                                           |       |       |       |       |                                                                                             |       |       |       |       |         |       |       |       |      |                                                                                     |
| 10                                                                                                                                                                                        |  | 166.8                                                                                     | 163.6 | 159.0 | 154.5 | 127.6 | 148.1                                                                                       | 145.1 | 144.0 | 136.4 | 120.2 | 134.2   | 131.6 | 127.5 | -     | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |  | 130.0                                                                                     | 127.5 | 123.8 | 120.2 | 116.5 | 121.6                                                                                       | 119.2 | 115.8 | 112.3 | 108.8 | 110.1   | 107.7 | 104.5 | 100.9 | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |  | 105.1                                                                                     | 103.0 | 100.1 | 97.1  | 94.1  | 100.6                                                                                       | 98.6  | 95.8  | 92.8  | 89.9  | 92.5    | 90.5  | 87.7  | 84.7  | 81.7 | 14                                                                                  |
| 16                                                                                                                                                                                        |  | 86.4                                                                                      | 84.8  | 82.4  | 80.1  | 77.7  | 85.1                                                                                        | 83.3  | 81.0  | 78.4  | 76.0  | 81.0    | 79.4  | 77.1  | 73.8  | 69.9 | 16                                                                                  |
| 18                                                                                                                                                                                        |  | 71.5                                                                                      | 70.2  | 68.3  | 66.4  | 64.5  | 73.7                                                                                        | 72.1  | 70.1  | 68.0  | 65.9  | 71.3    | 69.7  | 67.7  | 65.5  | 62.7 | 18                                                                                  |
| 20                                                                                                                                                                                        |  | 58.2                                                                                      | 57.1  | 55.6  | 54.1  | 52.3  | 63.2                                                                                        | 61.9  | 60.2  | 58.4  | 56.7  | 62.4    | 60.9  | 59.2  | 57.2  | 55.3 | 20                                                                                  |
| 24                                                                                                                                                                                        |  | 42.4                                                                                      | 41.5  | 40.4  | 39.3  | 38.1  | 46.7                                                                                        | 45.8  | 44.4  | 43.2  | 41.9  | 49.2    | 48.2  | 46.6  | 45.1  | 43.6 | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 32.1                                                                                      | 31.5  | 30.6  | 29.8  | 28.9  | 36.0                                                                                        | 35.4  | 34.3  | 33.3  | 32.3  | 38.7    | 37.8  | 36.7  | 35.6  | 34.4 | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 25.1                                                                                      | 24.8  | 24.1  | 23.4  | 22.7  | 28.6                                                                                        | 28.2  | 27.3  | 26.4  | 25.7  | 31.1    | 30.4  | 29.5  | 28.6  | 27.6 | 32                                                                                  |
| 36                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | 23.7                                                                                        | 23.2  | 22.5  | 21.8  | 21.1  | 26.0    | 25.3  | 24.6  | 23.8  | 23.0 | 36                                                                                  |
| 40                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | 19.4                                                                                        | 18.9  | 18.3  | 17.9  | 17.2  | 21.5    | 20.9  | 20.3  | 19.6  | 19.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 15.6    | 15.2  | 14.8  | 14.2  | 13.7 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -     | -     | -     | -     | -                                                                                           | -     | -     | -     | -     | 11.6    | 11.4  | 10.9  | 10.6  | 10.2 | 56                                                                                  |
| 1)                                                                                                                                                                                        |  | 22.5                                                                                      | 22.3  | 21.8  | 21.4  | 20.7  | 13.9                                                                                        | 13.7  | 13.2  | 13.0  | 12.6  | 9.3     | 9.0   | 8.8   | 8.6   | 8.4  | 1)                                                                                  |

|   |  | 84.0 ft |      |      |      |      | 98.1 ft |      |      |      |      | 111.9 ft |      |      |      |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|------|------|------|------|---------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
| ft                                                                                                                                                                  |  | 0,3°    | 1°   | 2°   | 3°   | 4°   | 0,3°    | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | ft                                                                                  |
| 1,000 lb                                                                                                                                                            |  |         |      |      |      |      |         |      |      |      |      |          |      |      |      |      |                                                                                     |
| 12                                                                                                                                                                  |  | 102.2   | 97.3 | -    | -    | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                  |  | 87.4    | 85.5 | 82.4 | -    | -    | -       | -    | -    | -    | -    | -        | -    | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                  |  | 75.6    | 74.0 | 71.5 | 69.0 | -    | 70.9    | 69.1 | -    | -    | -    | -        | -    | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                  |  | 66.9    | 65.4 | 63.2 | 60.9 | 58.7 | 63.1    | 61.5 | 58.3 | -    | -    | 55.9     | -    | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                  |  | 59.0    | 57.7 | 55.7 | 53.6 | 51.6 | 56.0    | 54.5 | 52.5 | 50.0 | 46.9 | 51.9     | 50.6 | 48.4 | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                  |  | 47.7    | 46.4 | 44.9 | 43.2 | 41.6 | 45.6    | 44.4 | 42.7 | 41.0 | 39.4 | 42.5     | 41.3 | 39.6 | 37.9 | 36.1 | 24                                                                                  |
| 28                                                                                                                                                                  |  | 38.8    | 37.8 | 36.5 | 35.3 | 34.0 | 37.8    | 36.9 | 35.4 | 34.1 | 32.6 | 35.4     | 34.3 | 32.9 | 31.4 | 29.8 | 28                                                                                  |
| 32                                                                                                                                                                  |  | 31.6    | 30.8 | 29.7 | 28.8 | 27.7 | 31.6    | 30.9 | 29.7 | 28.6 | 27.2 | 29.9     | 29.0 | 27.7 | 26.3 | 25.0 | 32                                                                                  |
| 36                                                                                                                                                                  |  | 26.4    | 25.8 | 24.9 | 24.0 | 23.1 | 26.8    | 26.1 | 25.1 | 24.1 | 23.0 | 25.7     | 24.9 | 23.7 | 22.5 | 21.2 | 36                                                                                  |
| 40                                                                                                                                                                  |  | 22.0    | 21.3 | 20.7 | 19.8 | 19.2 | 22.4    | 21.8 | 20.9 | 20.1 | 19.4 | 21.8     | 21.1 | 20.1 | 19.0 | 17.9 | 40                                                                                  |
| 48                                                                                                                                                                  |  | 16.0    | 15.6 | 15.0 | 14.4 | 13.7 | 16.5    | 16.0 | 15.4 | 14.8 | 13.9 | 16.0     | 15.6 | 15.0 | 14.1 | 13.3 | 48                                                                                  |
| 56                                                                                                                                                                  |  | 11.9    | 11.6 | 11.2 | 10.7 | 10.2 | 12.4    | 12.0 | 11.6 | 10.9 | 10.4 | 12.0     | 11.6 | 11.2 | 10.5 | 9.7  | 56                                                                                  |
| 64                                                                                                                                                                  |  | 9.1     | 8.9  | 8.4  | 8.0  | 7.5  | 9.4     | 9.1  | 8.7  | 8.2  | 7.8  | 9.1      | 8.7  | 8.3  | 7.8  | 7.1  | 64                                                                                  |
| 72                                                                                                                                                                  |  | 6.7     | 6.4  | 6.2  | 6.0  | 5.6  | 7.1     | 6.9  | 6.4  | 6.0  | 5.6  | 6.7      | 6.4  | 6.0  | 5.6  | 4.9  | 72                                                                                  |
| 80                                                                                                                                                                  |  | -       | -    | -    | -    | -    | 5.3     | 5.0  | 4.6  | 4.4  | 4.0  | 4.8      | 4.6  | 4.2  | 3.8  | 3.3  | 80                                                                                  |
| 88                                                                                                                                                                  |  | -       | -    | -    | -    | -    | 3.7     | 3.6  | 3.4  | 3.1  | 2.7  | 3.3      | 3.1  | 2.7  | -    | -    | 88                                                                                  |
| 1)                                                                                                                                                                  |  | 6.0     | 5.7  | 5.5  | 5.3  | 5.1  | 3.5     | 3.3  | 3.1  | 2.9  | 2.9  | -        | -    | -    | -    | -    | 1)                                                                                  |

1) Capacities with horizontal boom



## HA

|  11,000 lb +  33,100 lb |  |  11.5 ft |      |      |      |      |  32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|------|------|------|---------------------------------------------------------------------------------------------|------|------|------|------|----------|------|------|------|------|-------------------------------------------------------------------------------------|
|                         |  | 126.0 ft                                                                                  |      |      |      |      | 134.8 ft                                                                                    |      |      |      |      | 148.6 ft |      |      |      |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 2°   | 3°   | 4°   | 0,3°                                                                                        | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |      |      |      |                                                                                             |      |      |      |      |          |      |      |      |      | ft                                                                                  |
| 24                                                                                                                                                                                        |  | 39.8                                                                                      | 38.5 | 35.7 | -    | -    | 39.0                                                                                        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 33.2                                                                                      | 32.1 | 30.5 | 29.0 | 26.2 | 32.7                                                                                        | 31.6 | 30.0 | -    | -    | 30.1     | -    | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 28.1                                                                                      | 27.0 | 25.6 | 24.2 | 22.9 | 27.7                                                                                        | 26.7 | 25.3 | 24.0 | 22.4 | 25.3     | 24.4 | 22.9 | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 24.1                                                                                      | 23.2 | 21.9 | 20.7 | 19.5 | 23.9                                                                                        | 23.0 | 21.8 | 20.5 | 19.1 | 21.8     | 20.9 | 19.5 | 18.1 | 16.7 | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 20.5                                                                                      | 19.9 | 18.6 | 17.5 | 16.4 | 20.5                                                                                        | 19.7 | 18.6 | 17.3 | 16.2 | 18.6     | 17.7 | 16.4 | 15.3 | 14.0 | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 15.4                                                                                      | 14.8 | 13.8 | 12.9 | 11.9 | 15.4                                                                                        | 14.8 | 13.8 | 12.9 | 11.9 | 13.8     | 13.1 | 12.0 | 11.0 | 10.0 | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 11.6                                                                                      | 10.9 | 10.3 | 9.5  | 8.6  | 11.6                                                                                        | 11.2 | 10.3 | 9.5  | 8.6  | 10.3     | 9.6  | 8.6  | 7.9  | 7.0  | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 8.7                                                                                       | 8.2  | 7.5  | 6.9  | 6.2  | 8.7                                                                                         | 8.3  | 7.5  | 6.9  | 6.2  | 7.4      | 6.9  | 6.2  | 5.3  | 4.6  | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 6.2                                                                                       | 5.8  | 5.3  | 4.7  | 4.2  | 6.4                                                                                         | 6.0  | 5.6  | 4.9  | 4.2  | 5.3      | 4.7  | 4.0  | 3.3  | 2.7  | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 4.4                                                                                       | 4.0  | 3.5  | 3.1  | -    | 4.6                                                                                         | 4.4  | 3.8  | 3.3  | -    | 3.5      | -    | -    | -    | -    | 80                                                                                  |
| 88                                                                                                                                                                                        |  | 2.9                                                                                       | -    | -    | -    | -    | 3.1                                                                                         | 2.9  | -    | -    | -    | -        | -    | -    | -    | -    | 88                                                                                  |
| 1)                                                                                                                                                                                        |  | -                                                                                         | -    | -    | -    | -    | -                                                                                           | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)                                                                                  |

|   |  | 165.7 ft |      |      |      |      | 181.1 ft |      |      |      |    | 196.9 ft |    |    |    |    |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|------|------|------|------|----------|------|------|------|----|----------|----|----|----|----|-------------------------------------------------------------------------------------|
|                                                                                                                                                                     |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4° | 0,3°     | 1° | 2° | 3° | 4° |                                                                                     |
| ft                                                                                                                                                                  |  | 1,000 lb |      |      |      |      |          |      |      |      |    |          |    |    |    |    | ft                                                                                  |
| 36                                                                                                                                                                  |  | 19.6     | 18.5 | -    | -    | -    | -        | -    | -    | -    | -  | -        | -  | -  | -  | -  | 36                                                                                  |
| 40                                                                                                                                                                  |  | 16.6     | 15.5 | 14.2 | 12.9 | 11.6 | 14.2     | 13.3 | 11.8 | 10.3 | -  | -        | -  | -  | -  | -  | 40                                                                                  |
| 48                                                                                                                                                                  |  | 12.0     | 11.2 | 10.1 | 9.1  | 7.8  | 10.1     | 9.1  | 8.0  | 6.7  | -  | 8.2      | -  | -  | -  | -  | 48                                                                                  |
| 56                                                                                                                                                                  |  | 8.6      | 8.0  | 7.0  | 6.1  | 5.1  | 6.8      | 6.1  | 5.0  | 3.8  | -  | 5.1      | -  | -  | -  | -  | 56                                                                                  |
| 64                                                                                                                                                                  |  | 6.0      | 5.3  | 4.6  | 3.7  | 2.9  | 4.2      | 3.6  | 2.6  | -    | -  | 2.6      | -  | -  | -  | -  | 64                                                                                  |
| 72                                                                                                                                                                  |  | 3.8      | 3.3  | 2.7  | -    | -    | 2.2      | -    | -    | -    | -  | -        | -  | -  | -  | -  | 72                                                                                  |
| 1)                                                                                                                                                                  |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -  | -        | -  | -  | -  | -  | 1)                                                                                  |

|  0 lb +  33,100 lb |  |  11.5 ft |       |       |       |       |  32.2 ft/s |       |       |       |       | 360°    |       |       |      |      | ASME B30.5                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------|-------|-------|-------|-------|-----------------------------------------------------------------------------------------------|-------|-------|-------|-------|---------|-------|-------|------|------|---------------------------------------------------------------------------------------|
|                    |  | 42.3 ft                                                                                     |       |       |       |       | 56.1 ft                                                                                       |       |       |       |       | 70.2 ft |       |       |      |      |  |
|                                                                                                                                                                                          |  | 0,3°                                                                                        | 1°    | 2°    | 3°    | 4°    | 0,3°                                                                                          | 1°    | 2°    | 3°    | 4°    | 0,3°    | 1°    | 2°    | 3°   | 4°   |                                                                                       |
| ft                                                                                                                                                                                       |  | 1,000 lb                                                                                    |       |       |       |       |                                                                                               |       |       |       |       |         |       |       |      |      | ft                                                                                    |
| 10                                                                                                                                                                                       |  | 141.3                                                                                       | 138.2 | 133.9 | 129.3 | 124.8 | 129.0                                                                                         | 126.4 | 122.3 | 118.3 | 114.2 | 114.6   | 112.0 | 108.1 | -    | -    | 10                                                                                    |
| 12                                                                                                                                                                                       |  | 109.5                                                                                       | 107.0 | 103.6 | 100.0 | 96.5  | 103.2                                                                                         | 100.9 | 97.7  | 94.4  | 91.0  | 95.6    | 93.6  | 90.5  | 84.8 | -    | 12                                                                                    |
| 14                                                                                                                                                                                       |  | 88.0                                                                                        | 85.9  | 83.1  | 80.2  | 77.4  | 85.1                                                                                          | 83.1  | 80.4  | 77.6  | 74.9  | 80.3    | 78.4  | 75.8  | 73.2 | 68.7 | 14                                                                                    |
| 16                                                                                                                                                                                       |  | 72.5                                                                                        | 70.8  | 68.4  | 66.0  | 63.6  | 71.5                                                                                          | 69.9  | 67.6  | 65.3  | 62.9  | 68.5    | 66.9  | 64.7  | 62.4 | 60.1 | 16                                                                                    |
| 18                                                                                                                                                                                       |  | 60.0                                                                                        | 58.7  | 56.7  | 54.8  | 52.8  | 61.8                                                                                          | 60.5  | 58.4  | 56.4  | 54.2  | 59.9    | 58.6  | 56.5  | 54.5 | 52.4 | 18                                                                                    |
| 20                                                                                                                                                                                       |  | 48.6                                                                                        | 47.6  | 46.1  | 44.6  | 43.0  | 53.0                                                                                          | 52.0  | 50.0  | 48.3  | 46.4  | 52.2    | 51.1  | 49.2  | 47.4 | 45.5 | 20                                                                                    |
| 24                                                                                                                                                                                       |  | 34.8                                                                                        | 34.1  | 33.0  | 32.0  | 30.8  | 39.2                                                                                          | 38.4  | 37.1  | 35.9  | 34.6  | 41.2    | 40.2  | 38.8  | 37.2 | 35.8 | 24                                                                                    |
| 28                                                                                                                                                                                       |  | 26.0                                                                                        | 25.5  | 24.6  | 23.9  | 23.0  | 30.0                                                                                          | 29.3  | 28.3  | 27.4  | 26.4  | 32.5    | 31.8  | 30.7  | 29.6 | 28.5 | 28                                                                                    |
| 32                                                                                                                                                                                       |  | 20.0                                                                                        | 19.5  | 18.9  | 18.4  | 17.7  | 23.5                                                                                          | 23.0  | 22.2  | 21.4  | 20.7  | 25.9    | 25.2  | 24.5  | 23.6 | 22.6 | 32                                                                                    |
| 36                                                                                                                                                                                       |  | -                                                                                           | -     | -     | -     | -     | 19.2                                                                                          | 18.7  | 18.2  | 17.4  | 16.7  | 21.4    | 20.8  | 20.2  | 19.4 | 18.6 | 36                                                                                    |
| 40                                                                                                                                                                                       |  | -                                                                                           | -     | -     | -     | -     | 15.5                                                                                          | 15.0  | 14.6  | 13.9  | 13.3  | 17.4    | 17.0  | 16.4  | 15.7 | 15.1 | 40                                                                                    |
| 48                                                                                                                                                                                       |  | -                                                                                           | -     | -     | -     | -     | -                                                                                             | -     | -     | -     | -     | 12.4    | 12.0  | 11.6  | 11.2 | 10.6 | 48                                                                                    |
| 56                                                                                                                                                                                       |  | -                                                                                           | -     | -     | -     | -     | -                                                                                             | -     | -     | -     | -     | 8.8     | 8.6   | 8.3   | 7.9  | 7.4  | 56                                                                                    |
| 1)                                                                                                                                                                                       |  | 17.6                                                                                        | 17.4  | 17.0  | 16.5  | 16.1  | 10.6                                                                                          | 10.4  | 10.1  | 9.9   | 9.5   | 6.8     | 6.6   | 6.4   | 6.2  | 6.0  | 1)                                                                                    |

1) Capacities with horizontal boom

## HA

| 0 lb + 33,100 lb |  | 11.5 ft  |      |      |      |      | 32.2 ft/s |      |      |      |      | 360°     |      |      |      |      | ASME B30.5 |
|------------------|--|----------|------|------|------|------|-----------|------|------|------|------|----------|------|------|------|------|------------|
|                  |  | 84.0 ft  |      |      |      |      | 98.1 ft   |      |      |      |      | 111.9 ft |      |      |      |      |            |
|                  |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°      | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |            |
| ft               |  | 1,000 lb |      |      |      |      |           |      |      |      |      |          |      |      |      |      | ft         |
| 12               |  | 87.5     | 83.8 | -    | -    | -    | -         | -    | -    | -    | -    | -        | -    | -    | -    | -    | 12         |
| 14               |  | 74.3     | 72.4 | 69.7 | -    | -    | -         | -    | -    | -    | -    | -        | -    | -    | -    | -    | 14         |
| 16               |  | 64.1     | 62.5 | 60.0 | 57.7 | -    | 59.9      | 58.3 | -    | -    | -    | -        | -    | -    | -    | -    | 16         |
| 18               |  | 56.4     | 54.9 | 52.8 | 50.7 | 48.5 | 53.1      | 51.6 | 49.6 | -    | -    | 46.5     | -    | -    | -    | -    | 18         |
| 20               |  | 49.4     | 48.1 | 46.4 | 44.4 | 42.5 | 46.9      | 45.6 | 43.8 | 41.9 | 39.9 | 43.4     | 42.1 | 40.1 | -    | -    | 20         |
| 24               |  | 39.6     | 38.6 | 37.0 | 35.4 | 33.8 | 38.0      | 36.8 | 35.2 | 33.5 | 32.1 | 35.2     | 34.0 | 32.4 | 30.7 | 28.9 | 24         |
| 28               |  | 32.3     | 31.5 | 30.0 | 28.8 | 27.4 | 31.1      | 30.3 | 28.8 | 27.5 | 26.2 | 29.0     | 28.1 | 26.6 | 25.1 | 23.6 | 28         |
| 32               |  | 26.3     | 25.6 | 24.6 | 23.6 | 22.5 | 26.1      | 25.2 | 24.0 | 22.7 | 21.6 | 24.2     | 23.4 | 22.0 | 20.7 | 19.5 | 32         |
| 36               |  | 21.8     | 21.3 | 20.5 | 19.6 | 18.7 | 22.0      | 21.2 | 20.4 | 19.3 | 18.1 | 20.6     | 19.8 | 18.6 | 17.5 | 16.4 | 36         |
| 40               |  | 17.9     | 17.4 | 16.8 | 15.9 | 15.3 | 18.5      | 17.9 | 17.0 | 16.1 | 15.1 | 17.3     | 16.6 | 15.5 | 14.6 | 13.6 | 40         |
| 48               |  | 12.8     | 12.5 | 11.8 | 11.4 | 10.8 | 13.3      | 12.8 | 12.3 | 11.6 | 10.8 | 12.6     | 12.0 | 11.2 | 10.3 | 9.5  | 48         |
| 56               |  | 9.3      | 9.1  | 8.5  | 8.1  | 7.5  | 9.7       | 9.3  | 8.8  | 8.3  | 7.6  | 9.1      | 8.6  | 7.9  | 7.2  | 6.5  | 56         |
| 64               |  | 6.7      | 6.3  | 6.0  | 5.6  | 5.1  | 7.1       | 6.7  | 6.2  | 5.8  | 5.3  | 6.4      | 6.2  | 5.5  | 4.8  | 4.2  | 64         |
| 72               |  | 4.5      | 4.2  | 4.0  | 3.6  | 3.3  | 4.9       | 4.7  | 4.2  | 3.8  | 3.3  | 4.5      | 4.0  | 3.6  | 3.1  | 2.5  | 72         |
| 80               |  | -        | -    | -    | -    | -    | 3.3       | 3.1  | -    | -    | -    | -        | -    | -    | -    | -    | 80         |
| 1)               |  | 3.7      | 3.5  | 3.3  | 3.1  | 3.1  | -         | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1)         |

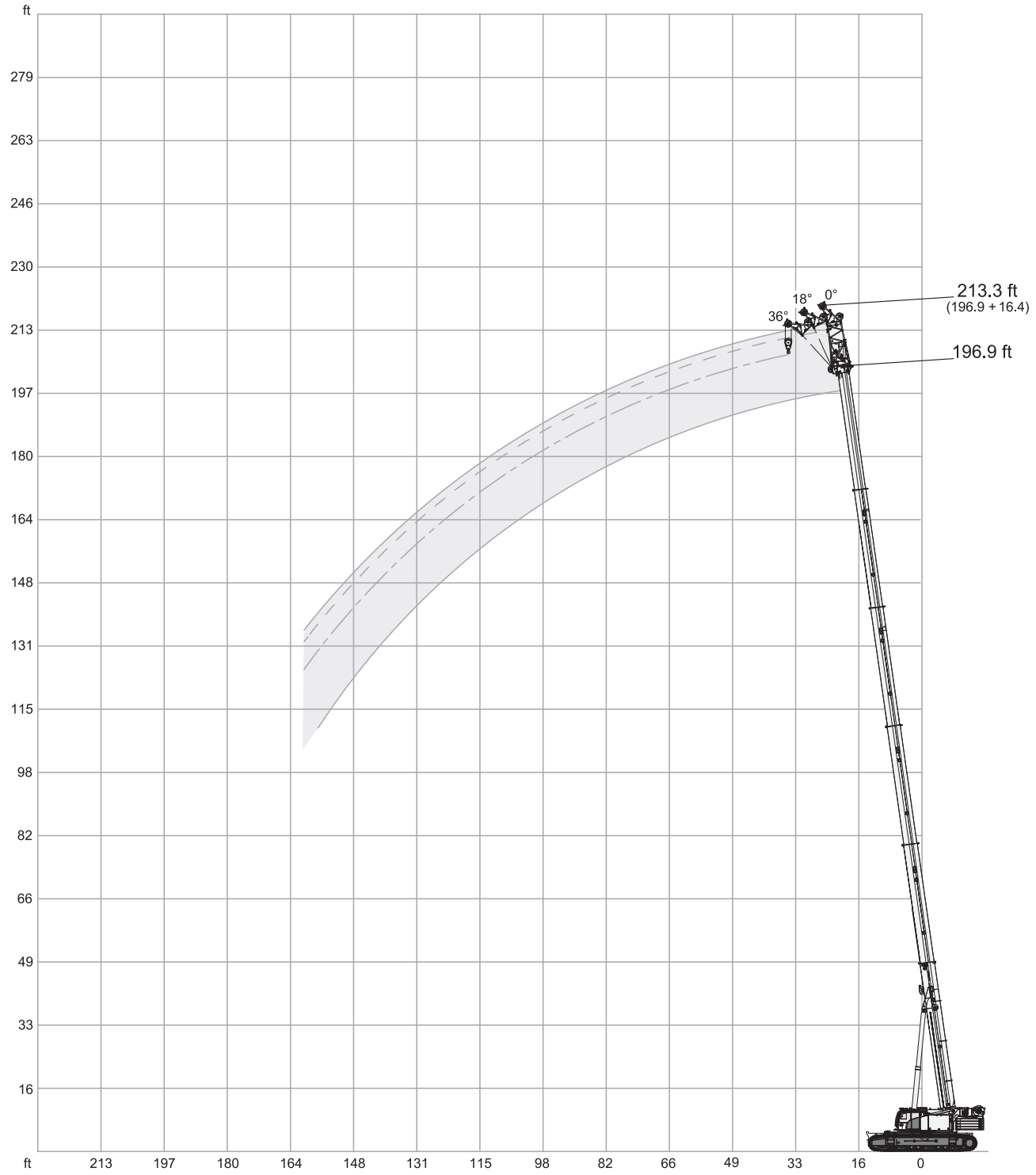
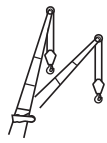
|    |  | 126.0 ft |      |      |      |      | 134.8 ft |      |      |      |      | 148.6 ft |      |      |      |      |    |
|----|--|----------|------|------|------|------|----------|------|------|------|------|----------|------|------|------|------|----|
|    |  | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   | 0,3°     | 1°   | 2°   | 3°   | 4°   |    |
| ft |  | 1,000 lb |      |      |      |      |          |      |      |      |      |          |      |      |      |      | ft |
| 24 |  | 32.8     | 31.5 | 28.7 | -    | -    | 32.1     | -    | -    | -    | -    | -        | -    | -    | -    | -    | 24 |
| 28 |  | 27.1     | 26.0 | 24.5 | 22.9 | 20.3 | 26.5     | 25.6 | 24.0 | -    | -    | 24.2     | -    | -    | -    | -    | 28 |
| 32 |  | 22.5     | 21.5 | 20.2 | 18.8 | 17.5 | 22.2     | 21.3 | 19.9 | 18.6 | 17.2 | 20.2     | 19.1 | 17.7 | -    | -    | 32 |
| 36 |  | 19.0     | 18.3 | 17.0 | 15.8 | 14.6 | 18.9     | 18.1 | 16.9 | 15.6 | 14.4 | 17.0     | 16.0 | 14.8 | 13.4 | 12.2 | 36 |
| 40 |  | 16.0     | 15.3 | 14.2 | 13.1 | 12.0 | 16.0     | 15.3 | 14.2 | 12.9 | 11.8 | 14.2     | 13.3 | 12.2 | 10.9 | 9.8  | 40 |
| 48 |  | 11.6     | 10.9 | 10.0 | 9.1  | 8.2  | 11.7     | 11.0 | 10.1 | 9.1  | 8.2  | 10.1     | 9.3  | 8.4  | 7.4  | 6.4  | 48 |
| 56 |  | 8.2      | 7.6  | 7.0  | 6.1  | 5.3  | 8.4      | 7.9  | 7.0  | 6.2  | 5.5  | 7.0      | 6.3  | 5.6  | 4.7  | 3.8  | 56 |
| 64 |  | 5.7      | 5.3  | 4.6  | 3.9  | 3.2  | 5.8      | 5.3  | 4.6  | 4.0  | 3.3  | 4.6      | 4.0  | 3.3  | 2.6  | -    | 64 |
| 72 |  | 3.6      | 3.3  | 2.7  | 2.2  | -    | 3.8      | 3.3  | 2.9  | 2.2  | -    | 2.7      | 2.2  | -    | -    | -    | 72 |
| 1) |  | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | -        | -    | -    | -    | -    | 1) |

|    |  | 165.7 ft |      |      |    |    | 181.1 ft |    |    |    |    | 196.9 ft |    |    |    |    |    |
|----|--|----------|------|------|----|----|----------|----|----|----|----|----------|----|----|----|----|----|
|    |  | 0,3°     | 1°   | 2°   | 3° | 4° | 0,3°     | 1° | 2° | 3° | 4° | 0,3°     | 1° | 2° | 3° | 4° |    |
| ft |  | 1,000 lb |      |      |    |    |          |    |    |    |    |          |    |    |    |    | ft |
| 36 |  | 14.9     | 13.9 | -    | -  | -  | -        | -  | -  | -  | -  | -        | -  | -  | -  | -  | 36 |
| 40 |  | 12.2     | 11.4 | 10.1 | -  | -  | 10.1     | -  | -  | -  | -  | -        | -  | -  | -  | -  | 40 |
| 48 |  | 8.4      | 7.6  | 6.5  | -  | -  | 6.5      | -  | -  | -  | -  | -        | -  | -  | -  | -  | 48 |
| 56 |  | 5.4      | 4.9  | 3.9  | -  | -  | 3.7      | -  | -  | -  | -  | -        | -  | -  | -  | -  | 56 |
| 64 |  | 3.2      | 2.6  | -    | -  | -  | -        | -  | -  | -  | -  | -        | -  | -  | -  | -  | 64 |
| 1) |  | -        | -    | -    | -  | -  | -        | -  | -  | -  | -  | -        | -  | -  | -  | -  | 1) |

1) Capacities with horizontal boom

# HAV



# HAV

|  99,200 lb +  33,100 lb |                                                                                   |  16.4 ft    |       |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|  42.3 ft                                                                                                 |                                                                                   |  126.0 ft |       |                                                                                           |      |                                                                                              |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                         | 1°    | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                           |       | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                              |       |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 119.2                                                                                        | 111.6 | 89.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 113.1                                                                                        | 106.0 | 86.0                                                                                      | 82.2 | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 107.3                                                                                        | 101.1 | 83.0                                                                                      | 79.5 | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 102.0                                                                                        | 96.4  | 80.3                                                                                      | 77.0 | 67.3                                                                                         | 64.9 | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 97.4                                                                                         | 92.4  | 77.9                                                                                      | 74.8 | 65.7                                                                                         | 63.6 | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 93.1                                                                                         | 88.6  | 75.5                                                                                      | 72.7 | 64.1                                                                                         | 62.4 | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 85.9                                                                                         | 82.2  | 71.6                                                                                      | 69.3 | 60.5                                                                                         | 59.4 | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 79.8                                                                                         | 76.7  | 67.8                                                                                      | 65.9 | 57.5                                                                                         | 56.6 | 75.2 | 68.1 | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 74.6                                                                                         | 71.9  | 63.6                                                                                      | 62.4 | 54.9                                                                                         | 54.2 | 67.2 | 66.1 | 62.9       | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 69.8                                                                                         | 67.7  | 59.7                                                                                      | 58.8 | 53.3                                                                                         | 52.6 | 61.1 | 61.0 | 58.8       | 58.6 | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 64.9                                                                                         | 63.4  | 56.1                                                                                      | 55.4 | -                                                                                            | -    | 55.5 | 55.5 | 54.6       | 54.4 | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 46.8 | 46.6 | 46.0       | 45.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 39.8 | 39.7 | 39.5       | 39.4 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 34.7 | 34.5 | 34.3       | 34.2 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 31.6 | 30.9 | 30.1       | 30.1 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 28.9 | 28.3 | 26.6       | 26.6 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 26.6 | 26.2 | 24.8       | 24.8 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 23.6 | 23.5 | 23.3       | 23.3 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 20.4 | 20.4 | 20.7       | 20.7 | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 17.7 | 17.7 | 17.9       | 17.9 | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 15.4 | 15.4 | 15.6       | 15.6 | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                            | -     | -                                                                                         | -    | -                                                                                            | -    | 13.5 | 13.5 | -          | -    | 128                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |          |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|----------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°       | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |          | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      | 1,000 lb |      |      |                                                                                                |      |      |      |      | ft   |                                                                                       |  |
| 48                                                                                  |                                                                                     | 35.2                                                                                         | 28.7 | -    | -        | -    | -    | 26.6                                                                                           | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 31.2                                                                                         | 27.8 | 30.4 | 27.5     | 29.7 | -    | 25.0                                                                                           | 22.5 | 25.1 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 27.4                                                                                         | 25.3 | 26.9 | 25.0     | 26.6 | 24.6 | 22.4                                                                                           | 21.3 | 22.2 | 21.4 | 22.1 | 21.4 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 24.1                                                                                         | 22.3 | 23.9 | 22.1     | 23.9 | 22.1 | 19.7                                                                                           | 19.2 | 19.7 | 19.4 | 19.5 | 19.4 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 21.1                                                                                         | 19.5 | 21.2 | 19.7     | 21.2 | 19.5 | 17.3                                                                                           | 17.1 | 17.3 | 17.3 | 17.5 | 17.3 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 18.5                                                                                         | 17.1 | 18.7 | 17.4     | 18.8 | 17.4 | 15.1                                                                                           | 14.9 | 15.2 | 15.1 | 15.5 | 15.4 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 16.3                                                                                         | 15.1 | 16.5 | 15.3     | 16.7 | 15.3 | 13.1                                                                                           | 13.1 | 13.4 | 13.3 | 13.6 | 13.4 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 14.5                                                                                         | 13.4 | 14.6 | 13.5     | 14.6 | 13.6 | 11.4                                                                                           | 11.4 | 11.7 | 11.7 | 11.9 | 11.9 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 12.9                                                                                         | 11.8 | 12.9 | 12.0     | 12.9 | 12.0 | 10.1                                                                                           | 10.1 | 10.3 | 10.3 | 10.3 | 10.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 11.4                                                                                         | 10.5 | 11.5 | 10.7     | 11.6 | 10.7 | 8.8                                                                                            | 8.8  | 9.0  | 9.0  | 9.0  | 9.0  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 10.0                                                                                         | 9.3  | 10.1 | 9.5      | 10.2 | 9.5  | 7.7                                                                                            | 7.7  | 7.9  | 7.9  | 7.9  | 7.9  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 8.8                                                                                          | 8.2  | 9.1  | 8.4      | 9.1  | 8.4  | 6.6                                                                                            | 6.6  | 6.9  | 6.9  | 6.9  | 6.9  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 8.0                                                                                          | 7.3  | 8.0  | 7.3      | 8.0  | 7.3  | 5.8                                                                                            | 5.8  | 6.0  | 6.0  | 6.0  | 6.0  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 6.9                                                                                          | 6.5  | 7.1  | 6.5      | 7.1  | 6.5  | 5.0                                                                                            | 5.0  | 5.2  | 5.2  | 5.2  | 5.2  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | 6.1                                                                                          | 5.7  | 6.1  | 5.7      | -    | -    | 4.2                                                                                            | 4.2  | 4.4  | 4.4  | 4.4  | 4.4  | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | 5.2                                                                                          | 4.9  | 5.3  | 5.0      | -    | -    | 3.6                                                                                            | 3.6  | 3.7  | 3.7  | -    | -    | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | 4.7                                                                                          | 4.3  | 4.3  | 4.3      | -    | -    | 3.0                                                                                            | 3.0  | 3.2  | 3.2  | -    | -    | 176                                                                                   |  |



# HAV

|  99,200 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                         | 27.8 | 51.0 | 45.2 | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 40.1 | 34.9                                                                                      | 33.3 | 27.5                                                                                         | 26.4 | 49.3 | 44.1 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 37.4 | 33.0                                                                                      | 31.5 | 26.0                                                                                         | 24.9 | 47.5 | 43.0 | 37.4       | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 34.7                                                                                      | 33.2 | 29.1                                                                                      | 28.1 | 23.5                                                                                         | 22.7 | 42.8 | 40.5 | 34.3       | 33.2 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 30.8                                                                                      | 29.6 | 26.2                                                                                      | 25.4 | 22.0                                                                                         | 21.4 | 37.4 | 36.7 | 31.6       | 31.4 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 27.2                                                                                      | 26.2 | 24.1                                                                                      | 23.5 | -                                                                                            | -    | 32.3 | 32.2 | 29.5       | 29.3 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 28.3 | 28.3 | 27.4       | 27.4 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 25.1 | 24.9 | 24.8       | 24.7 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 22.2 | 22.2 | 22.3       | 22.2 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 19.8 | 19.8 | 19.9       | 19.9 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.9 | 17.9 | 17.9       | 17.9 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.2 | 16.2 | 16.2       | 16.2 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.2 | 15.2 | 14.7       | 14.7 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 14.1 | 14.1 | 13.4       | 13.4 | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.7 | 12.7 | 12.2       | 12.2 | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.1 | 11.1 | 11.3       | 11.3 | 144                                                                                 |     |

|   |      |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |     |  |      |  |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|-----|---------------------------------------------------------------------------------------|------|--|----|--|
|                                                                                                                                                                         |      | 0,3°                                                                                         |      | 1°   |      | 0,3°     |      | 1°                                                                                             |      | 0,3° |      | 1°   |     |                                                                                       | 0,3° |  | 1° |  |
|                                                                                                                                                                         |      | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |     |                                                                                       |      |  |    |  |
| ft                                                                                                                                                                      |      |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      |      |     | ft                                                                                    |      |  |    |  |
| 56                                                                                                                                                                      | 25.1 | 21.4                                                                                         | -    | -    | -    | -        | 20.6 | 17.0                                                                                           | -    | -    | -    | -    | 56  |                                                                                       |      |  |    |  |
| 64                                                                                                                                                                      | 23.3 | 21.4                                                                                         | -    | -    | -    | -        | 19.8 | 17.0                                                                                           | -    | -    | -    | -    | 64  |                                                                                       |      |  |    |  |
| 72                                                                                                                                                                      | 21.0 | 20.3                                                                                         | 19.9 | 19.9 | -    | -        | 18.3 | 17.0                                                                                           | 17.9 | -    | -    | -    | 72  |                                                                                       |      |  |    |  |
| 80                                                                                                                                                                      | 18.7 | 18.6                                                                                         | 18.0 | 18.0 | 17.4 | 17.4     | 16.5 | 15.7                                                                                           | 16.3 | 15.9 | 15.7 | 15.7 | 80  |                                                                                       |      |  |    |  |
| 88                                                                                                                                                                      | 16.7 | 16.6                                                                                         | 16.4 | 16.4 | 16.1 | 16.1     | 14.6 | 14.4                                                                                           | 14.7 | 14.5 | 14.3 | 14.3 | 88  |                                                                                       |      |  |    |  |
| 96                                                                                                                                                                      | 14.7 | 14.7                                                                                         | 15.0 | 14.8 | 14.7 | 14.7     | 12.8 | 12.8                                                                                           | 13.1 | 13.1 | 13.1 | 13.0 | 96  |                                                                                       |      |  |    |  |
| 104                                                                                                                                                                     | 13.0 | 13.0                                                                                         | 13.4 | 13.4 | 13.4 | 13.4     | 11.2 | 11.2                                                                                           | 11.6 | 11.6 | 11.9 | 11.8 | 104 |                                                                                       |      |  |    |  |
| 112                                                                                                                                                                     | 11.6 | 11.6                                                                                         | 12.0 | 12.0 | 12.3 | 12.0     | 9.8  | 9.8                                                                                            | 10.3 | 10.3 | 10.5 | 10.5 | 112 |                                                                                       |      |  |    |  |
| 120                                                                                                                                                                     | 10.3 | 10.3                                                                                         | 10.7 | 10.5 | 10.8 | 10.8     | 8.6  | 8.6                                                                                            | 9.0  | 9.0  | 9.2  | 9.2  | 120 |                                                                                       |      |  |    |  |
| 128                                                                                                                                                                     | 9.1  | 9.0                                                                                          | 9.5  | 9.5  | 9.6  | 9.6      | 7.5  | 7.5                                                                                            | 7.9  | 7.9  | 8.2  | 8.2  | 128 |                                                                                       |      |  |    |  |
| 136                                                                                                                                                                     | 8.1  | 8.0                                                                                          | 8.4  | 8.4  | 8.6  | 8.6      | 6.6  | 6.6                                                                                            | 6.9  | 6.9  | 7.1  | 7.1  | 136 |                                                                                       |      |  |    |  |
| 144                                                                                                                                                                     | 7.1  | 7.1                                                                                          | 7.3  | 7.3  | 7.5  | 7.5      | 5.8  | 5.6                                                                                            | 6.0  | 6.0  | 6.2  | 6.2  | 144 |                                                                                       |      |  |    |  |
| 152                                                                                                                                                                     | 6.3  | 6.3                                                                                          | 6.5  | 6.5  | 6.7  | 6.7      | 5.0  | 4.8                                                                                            | 5.2  | 5.2  | 5.4  | 5.4  | 152 |                                                                                       |      |  |    |  |
| 160                                                                                                                                                                     | 5.5  | 5.5                                                                                          | 5.7  | 5.7  | 5.8  | 5.8      | 4.2  | 4.2                                                                                            | 4.4  | 4.4  | 4.6  | 4.6  | 160 |                                                                                       |      |  |    |  |
| 168                                                                                                                                                                     | 4.8  | 4.8                                                                                          | 5.0  | 5.0  | 5.1  | 5.1      | 3.5  | 3.5                                                                                            | 3.7  | 3.7  | 3.9  | 3.9  | 168 |                                                                                       |      |  |    |  |
| 176                                                                                                                                                                     | 4.3  | 4.3                                                                                          | 4.3  | 4.3  | 4.3  | 4.3      | 2.9  | 2.9                                                                                            | 3.2  | 3.2  | 3.2  | 3.2  | 176 |                                                                                       |      |  |    |  |
| 184                                                                                                                                                                     | 3.6  | 3.6                                                                                          | 3.7  | 3.7  | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | 184 |                                                                                       |      |  |    |  |
| 192                                                                                                                                                                     | 3.0  | 3.0                                                                                          | 3.2  | 3.2  | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | 192 |                                                                                       |      |  |    |  |
| 200                                                                                                                                                                     | 2.6  | 2.6                                                                                          | 2.5  | 2.5  | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | 200 |                                                                                       |      |  |    |  |





# HAV

|  99,200 lb +  33,100 lb |  |  55.8 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                         |  |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |                                                                                     |
|                                                                                                                                                                                           |  | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |
| 14                                                                                                                                                                                        |  | 49.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |  | 47.3                                                                                      | 41.7 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |  | 45.5                                                                                      | 40.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |  | 43.6                                                                                      | 39.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |  | 40.0                                                                                      | 36.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |  | 36.8                                                                                      | 33.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |  | 34.1                                                                                      | 31.5 | 26.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |  | 31.7                                                                                      | 29.5 | 24.8                                                                                      | 23.6 | -                                                                                            | -    | 33.9 | 28.3 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |  | 29.5                                                                                      | 27.5 | 23.4                                                                                      | 22.3 | -                                                                                            | -    | 32.9 | 27.7 | -          | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |  | 25.8                                                                                      | 24.4 | 21.0                                                                                      | 20.1 | 16.1                                                                                         | 15.5 | 30.8 | 26.3 | -          | -    | 48                                                                                  |
| 56                                                                                                                                                                                        |  | 22.9                                                                                      | 21.7 | 18.9                                                                                      | 17.9 | 14.6                                                                                         | 14.1 | 28.9 | 25.0 | 22.1       | 20.7 | 56                                                                                  |
| 64                                                                                                                                                                                        |  | 20.3                                                                                      | 19.2 | 16.9                                                                                      | 16.2 | 13.4                                                                                         | 13.0 | 27.1 | 23.8 | 20.8       | 19.5 | 64                                                                                  |
| 72                                                                                                                                                                                        |  | 18.1                                                                                      | 17.2 | 15.5                                                                                      | 14.8 | 12.6                                                                                         | 12.1 | 25.4 | 22.5 | 19.6       | 18.3 | 72                                                                                  |
| 80                                                                                                                                                                                        |  | 16.3                                                                                      | 15.7 | 14.2                                                                                      | 13.8 | -                                                                                            | -    | 23.5 | 21.2 | 18.3       | 17.3 | 80                                                                                  |
| 88                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 21.4 | 19.7 | 17.3       | 16.5 | 88                                                                                  |
| 96                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 19.4 | 18.0 | 16.3       | 15.7 | 96                                                                                  |
| 104                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.2 | 16.1 | 15.3       | 14.9 | 104                                                                                 |
| 112                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.6 | 14.5 | 14.5       | 14.3 | 112                                                                                 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 14.0 | 13.1 | 13.4       | 13.4 | 120                                                                                 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.8 | 11.9 | 12.2       | 12.2 | 128                                                                                 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.7 | 10.8 | 11.0       | 11.0 | 136                                                                                 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.6 | 10.0 | 10.0       | 10.0 | 144                                                                                 |
| 152                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.6  | 9.2  | 9.2        | 9.2  | 152                                                                                 |
| 160                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.1  | 8.6  | 8.6        | 8.6  | 160                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |          |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|----------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°       | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |          | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |
| ft                                                                                  |                                                                                     |                                                                                              |      |      | 1,000 lb |      |      |                                                                                                |      |      |      |      | ft   |                                                                                       |
| 56                                                                                  |                                                                                     | 19.6                                                                                         | 15.7 | -    | -        | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |
| 64                                                                                  |                                                                                     | 19.2                                                                                         | 15.7 | -    | -        | -    | -    | 15.8                                                                                           | 12.6 | -    | -    | -    | -    | 64                                                                                    |
| 72                                                                                  |                                                                                     | 18.8                                                                                         | 15.7 | -    | -        | -    | -    | 15.4                                                                                           | 12.6 | -    | -    | -    | -    | 72                                                                                    |
| 80                                                                                  |                                                                                     | 17.4                                                                                         | 15.7 | 15.5 | 15.3     | -    | -    | 14.9                                                                                           | 12.6 | 14.2 | -    | -    | -    | 80                                                                                    |
| 88                                                                                  |                                                                                     | 15.8                                                                                         | 15.4 | 14.5 | 14.4     | 12.8 | 12.0 | 13.9                                                                                           | 12.5 | 13.1 | 12.5 | -    | -    | 88                                                                                    |
| 96                                                                                  |                                                                                     | 14.3                                                                                         | 14.2 | 13.6 | 13.5     | 12.3 | 11.8 | 12.4                                                                                           | 12.1 | 12.0 | 11.9 | 11.2 | 11.2 | 96                                                                                    |
| 104                                                                                 |                                                                                     | 12.8                                                                                         | 12.7 | 12.5 | 12.5     | 11.8 | 11.5 | 11.0                                                                                           | 11.0 | 11.1 | 10.9 | 10.6 | 10.6 | 104                                                                                   |
| 112                                                                                 |                                                                                     | 11.4                                                                                         | 11.4 | 11.6 | 11.4     | 11.2 | 11.0 | 9.6                                                                                            | 9.6  | 10.1 | 10.1 | 9.9  | 9.9  | 112                                                                                   |
| 120                                                                                 |                                                                                     | 10.3                                                                                         | 10.1 | 10.5 | 10.5     | 10.4 | 10.4 | 8.6                                                                                            | 8.6  | 9.0  | 9.0  | 9.1  | 9.1  | 120                                                                                   |
| 128                                                                                 |                                                                                     | 9.0                                                                                          | 9.0  | 9.5  | 9.5      | 9.6  | 9.6  | 7.5                                                                                            | 7.5  | 8.0  | 7.9  | 8.3  | 8.3  | 128                                                                                   |
| 136                                                                                 |                                                                                     | 8.0                                                                                          | 8.0  | 8.4  | 8.4      | 8.8  | 8.6  | 6.6                                                                                            | 6.4  | 7.1  | 7.0  | 7.5  | 7.5  | 136                                                                                   |
| 144                                                                                 |                                                                                     | 7.1                                                                                          | 7.1  | 7.5  | 7.5      | 7.8  | 7.8  | 5.6                                                                                            | 5.5  | 6.2  | 6.2  | 6.4  | 6.4  | 144                                                                                   |
| 152                                                                                 |                                                                                     | 6.3                                                                                          | 6.3  | 6.7  | 6.7      | 6.9  | 6.9  | 4.8                                                                                            | 4.8  | 5.4  | 5.4  | 5.6  | 5.6  | 152                                                                                   |
| 160                                                                                 |                                                                                     | 5.5                                                                                          | 5.5  | 5.9  | 5.8      | 6.1  | 6.1  | 4.2                                                                                            | 4.2  | 4.6  | 4.6  | 4.8  | 4.8  | 160                                                                                   |
| 168                                                                                 |                                                                                     | 4.8                                                                                          | 4.8  | 5.2  | 5.2      | 5.4  | 5.3  | 3.5                                                                                            | 3.5  | 3.9  | 3.9  | 4.1  | 4.1  | 168                                                                                   |
| 176                                                                                 |                                                                                     | 4.3                                                                                          | 4.3  | 4.5  | 4.5      | 4.7  | 4.5  | 2.9                                                                                            | 2.9  | 3.4  | 3.2  | 3.4  | 3.4  | 176                                                                                   |
| 184                                                                                 |                                                                                     | 3.6                                                                                          | 3.6  | 3.8  | 3.8      | 4.1  | 4.0  | -                                                                                              | -    | 2.7  | 2.6  | 2.8  | 2.8  | 184                                                                                   |
| 192                                                                                 |                                                                                     | 3.0                                                                                          | 3.0  | 3.2  | 3.2      | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 192                                                                                   |
| 200                                                                                 |                                                                                     | 2.6                                                                                          | 2.6  | 2.8  | 2.8      | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 200                                                                                   |



# HAV

|  99,200 lb +  33,100 lb |                                                                                   |  75.5 ft |      |  19.7 ft |      |  32.2 ft/s |     | 360°                                                                                         |      | ASME B30.5 |      |      |     |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------|------|------------|------|------|-----|-------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |                                                                                             |     |  126.0 ft |      |            |      |      |     |                                                                                     |  |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                        | 1°  | 0,3°                                                                                         | 1°   | 0,3°       | 1°   | 0,3° | 1°  |  |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                         |     | 0°                                                                                           |      | 18°        |      | 36°  |     |                                                                                     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                             |     |                                                                                              |      |            |      |      |     | ft                                                                                  |  |
| 18                                                                                                                                                                                        |                                                                                   | 32.9                                                                                      | -    | -                                                                                         | -    | -                                                                                           | -   | -                                                                                            | -    | -          | -    | -    | -   | 18                                                                                  |  |
| 20                                                                                                                                                                                        |                                                                                   | 32.1                                                                                      | 26.6 | -                                                                                         | -    | -                                                                                           | -   | -                                                                                            | -    | -          | -    | -    | -   | 20                                                                                  |  |
| 24                                                                                                                                                                                        |                                                                                   | 30.4                                                                                      | 25.4 | -                                                                                         | -    | -                                                                                           | -   | -                                                                                            | -    | -          | -    | -    | -   | 24                                                                                  |  |
| 28                                                                                                                                                                                        |                                                                                   | 28.7                                                                                      | 24.2 | -                                                                                         | -    | -                                                                                           | -   | -                                                                                            | -    | -          | -    | -    | -   | 28                                                                                  |  |
| 32                                                                                                                                                                                        |                                                                                   | 26.8                                                                                      | 23.0 | -                                                                                         | -    | -                                                                                           | -   | -                                                                                            | -    | -          | -    | -    | -   | 32                                                                                  |  |
| 36                                                                                                                                                                                        |                                                                                   | 25.2                                                                                      | 21.7 | -                                                                                         | -    | -                                                                                           | -   | -                                                                                            | -    | -          | -    | -    | -   | 36                                                                                  |  |
| 40                                                                                                                                                                                        |                                                                                   | 23.6                                                                                      | 20.6 | 19.0                                                                                      | -    | -                                                                                           | -   | 22.2                                                                                         | 19.8 | -          | -    | -    | -   | 40                                                                                  |  |
| 48                                                                                                                                                                                        |                                                                                   | 20.9                                                                                      | 18.5 | 16.7                                                                                      | 15.6 | -                                                                                           | -   | 21.2                                                                                         | 19.0 | -          | -    | -    | -   | 48                                                                                  |  |
| 56                                                                                                                                                                                        |                                                                                   | 18.5                                                                                      | 16.7 | 14.8                                                                                      | 14.0 | -                                                                                           | -   | 20.3                                                                                         | 18.2 | -          | -    | -    | -   | 56                                                                                  |  |
| 64                                                                                                                                                                                        |                                                                                   | 16.3                                                                                      | 15.1 | 13.3                                                                                      | 12.6 | 10.1                                                                                        | 9.9 | 19.2                                                                                         | 17.4 | 15.0       | -    | -    | -   | 64                                                                                  |  |
| 72                                                                                                                                                                                        |                                                                                   | 14.6                                                                                      | 13.5 | 11.9                                                                                      | 11.5 | 9.3                                                                                         | 9.1 | 18.1                                                                                         | 16.6 | 14.1       | 13.0 | -    | -   | 72                                                                                  |  |
| 80                                                                                                                                                                                        |                                                                                   | 13.0                                                                                      | 12.2 | 10.9                                                                                      | 10.5 | 8.7                                                                                         | 8.3 | 17.0                                                                                         | 15.7 | 13.3       | 12.3 | 9.6  | 9.2 | 80                                                                                  |  |
| 88                                                                                                                                                                                        |                                                                                   | 11.8                                                                                      | 11.1 | 10.1                                                                                      | 9.6  | 8.1                                                                                         | 7.8 | 16.0                                                                                         | 14.8 | 12.5       | 11.7 | 9.2  | 8.7 | 88                                                                                  |  |
| 96                                                                                                                                                                                        |                                                                                   | 10.8                                                                                      | 10.2 | 9.3                                                                                       | 9.0  | 7.7                                                                                         | 7.4 | 15.1                                                                                         | 13.9 | 11.7       | 11.0 | 8.8  | 8.3 | 96                                                                                  |  |
| 104                                                                                                                                                                                       |                                                                                   | 10.0                                                                                      | 9.4  | 8.7                                                                                       | 8.4  | -                                                                                           | -   | 14.2                                                                                         | 13.3 | 11.1       | 10.4 | 8.4  | 8.0 | 104                                                                                 |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 13.4                                                                                         | 12.5 | 10.6       | 10.1 | 8.1  | 7.7 | 112                                                                                 |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 12.6                                                                                         | 11.8 | 10.1       | 9.6  | 7.9  | 7.4 | 120                                                                                 |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 11.7                                                                                         | 11.1 | 9.7        | 9.1  | 7.6  | 7.3 | 128                                                                                 |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 10.6                                                                                         | 10.3 | 9.3        | 8.9  | 7.3  | 7.1 | 136                                                                                 |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 9.5                                                                                          | 9.3  | 8.8        | 8.6  | 7.3  | 6.8 | 144                                                                                 |  |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 8.5                                                                                          | 8.5  | 8.5        | 8.3  | 7.1  | 6.8 | 152                                                                                 |  |
| 160                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 7.9                                                                                          | 7.9  | 8.0        | 7.9  | 7.1  | 6.8 | 160                                                                                 |  |
| 168                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 7.2                                                                                          | 7.2  | 7.3        | 7.2  | -    | -   | 168                                                                                 |  |
| 176                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 6.5                                                                                          | 6.5  | 6.7        | 6.7  | -    | -   | 176                                                                                 |  |
| 184                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -   | 5.9                                                                                          | 5.9  | -          | -    | -    | -   | 184                                                                                 |  |

|   |           |  181.1 ft |         |          |         |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|----------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1°  | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°     | 0°       | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |         |          |         |                                                                                                |         |         |         | ft                                                                                    |     |
| 64                                                                                                                                                                      | 14.4 11.2 | - -                                                                                          | - -     | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 14.1 11.2 | - -                                                                                          | - -     | 11.7 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 13.8 11.2 | - -                                                                                          | - -     | 11.4 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 13.5 11.2 | 11.5 10.6                                                                                    | - -     | 11.2 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 12.8 11.2 | 11.0 10.2                                                                                    | - -     | 10.9 8.8 | 10.3 -  | - -                                                                                            | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 11.8 11.2 | 10.4 9.8                                                                                     | 8.2 -   | 10.2 8.8 | 9.6 8.8 | - -                                                                                            | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | 10.7 10.5 | 9.9 9.5                                                                                      | 7.9 7.5 | 9.2 8.8  | 9.0 8.8 | 7.7 7.3                                                                                        | - -     | - -     | - -     | 112                                                                                   | 112 |
| 120                                                                                                                                                                     | 9.7 9.7   | 9.4 9.1                                                                                      | 7.7 7.2 | 8.2 8.1  | 8.3 8.3 | 7.7 7.1                                                                                        | - -     | - -     | - -     | 120                                                                                   | 120 |
| 128                                                                                                                                                                     | 8.8 8.7   | 8.7 8.6                                                                                      | 7.5 7.1 | 7.3 7.2  | 7.6 7.6 | 7.3 6.9                                                                                        | - -     | - -     | - -     | 128                                                                                   | 128 |
| 136                                                                                                                                                                     | 7.7 7.7   | 8.1 8.1                                                                                      | 7.3 6.9 | 6.4 6.2  | 6.8 6.8 | 6.9 6.7                                                                                        | - -     | - -     | - -     | 136                                                                                   | 136 |
| 144                                                                                                                                                                     | 6.9 6.9   | 7.3 7.3                                                                                      | 7.1 6.8 | 5.5 5.3  | 6.0 6.0 | 6.4 6.2                                                                                        | - -     | - -     | - -     | 144                                                                                   | 144 |
| 152                                                                                                                                                                     | 6.1 6.1   | 6.5 6.5                                                                                      | 6.7 6.4 | 4.6 4.6  | 5.4 5.4 | 5.7 5.7                                                                                        | - -     | - -     | - -     | 152                                                                                   | 152 |
| 160                                                                                                                                                                     | 5.3 5.3   | 5.8 5.8                                                                                      | 6.0 6.0 | 3.9 3.9  | 4.6 4.6 | 5.0 5.0                                                                                        | - -     | - -     | - -     | 160                                                                                   | 160 |
| 168                                                                                                                                                                     | 4.5 4.5   | 5.2 5.2                                                                                      | 5.4 5.4 | 3.3 3.3  | 3.9 3.9 | 4.3 4.3                                                                                        | - -     | - -     | - -     | 168                                                                                   | 168 |
| 176                                                                                                                                                                     | 3.8 3.8   | 4.5 4.5                                                                                      | 4.7 4.7 | 2.7 2.7  | 3.2 3.2 | 3.6 3.6                                                                                        | - -     | - -     | - -     | 176                                                                                   | 176 |
| 184                                                                                                                                                                     | 3.4 3.3   | 3.8 3.8                                                                                      | 4.1 4.1 | - -      | 2.6 2.6 | 3.1 3.0                                                                                        | - -     | - -     | - -     | 184                                                                                   | 184 |
| 192                                                                                                                                                                     | - -       | 3.2 3.2                                                                                      | 3.4 3.4 | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | 192                                                                                   | 192 |
| 200                                                                                                                                                                     | - -       | 2.7 2.7                                                                                      | 2.9 2.9 | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | 200                                                                                   | 200 |



# HAV

|  77,200 lb +  33,100 lb |                                                                                   |  16.4 ft |       |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |       |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°    | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |       | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |       |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 119.2                                                                                     | 111.6 | 89.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 113.1                                                                                     | 106.0 | 86.0                                                                                      | 82.2 | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 107.3                                                                                     | 101.1 | 83.0                                                                                      | 79.5 | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 102.0                                                                                     | 96.4  | 80.3                                                                                      | 77.0 | 67.3                                                                                         | 64.9 | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 97.4                                                                                      | 92.4  | 77.9                                                                                      | 74.8 | 65.7                                                                                         | 63.6 | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 93.1                                                                                      | 88.6  | 75.5                                                                                      | 72.7 | 64.1                                                                                         | 62.4 | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 85.9                                                                                      | 82.2  | 71.6                                                                                      | 69.3 | 60.5                                                                                         | 59.4 | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 79.8                                                                                      | 76.7  | 67.8                                                                                      | 65.9 | 57.5                                                                                         | 56.6 | 75.2 | 68.1 | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 74.6                                                                                      | 71.9  | 63.6                                                                                      | 62.4 | 54.9                                                                                         | 54.2 | 67.2 | 66.1 | 62.9       | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 69.8                                                                                      | 67.7  | 59.7                                                                                      | 58.8 | 53.3                                                                                         | 52.6 | 61.1 | 61.0 | 58.8       | 58.6 | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 64.9                                                                                      | 63.4  | 56.1                                                                                      | 55.4 | -                                                                                            | -    | 55.5 | 55.5 | 54.6       | 54.4 | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 46.8 | 46.6 | 46.0       | 45.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 39.8 | 39.7 | 39.5       | 39.4 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 34.7 | 34.5 | 34.3       | 34.2 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 31.6 | 30.9 | 30.1       | 30.1 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 27.1 | 27.1 | 26.5       | 26.5 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 22.8 | 22.8 | 23.3       | 23.3 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 19.3 | 19.3 | 19.7       | 19.7 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 16.4 | 16.4 | 16.9       | 16.9 | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 14.7 | 14.7 | 14.5       | 14.5 | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 13.6 | 13.6 | 13.4       | 13.4 | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 12.1 | 12.1 | -          | -    | 128                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |          |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|----------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°       | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |          | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      | 1,000 lb |      |      |                                                                                                |      |      |      |      | ft   |                                                                                       |  |
| 48                                                                                  |                                                                                     | 35.2                                                                                         | 28.7 | -    | -        | -    | -    | 26.6                                                                                           | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 31.2                                                                                         | 27.8 | 30.4 | 27.5     | 29.7 | -    | 25.0                                                                                           | 22.5 | 25.1 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 27.4                                                                                         | 25.3 | 26.9 | 25.0     | 26.6 | 24.6 | 22.4                                                                                           | 21.3 | 22.2 | 21.4 | 22.1 | 21.4 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 24.1                                                                                         | 22.3 | 23.9 | 22.1     | 23.9 | 22.1 | 19.7                                                                                           | 19.2 | 19.7 | 19.4 | 19.5 | 19.4 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 21.1                                                                                         | 19.5 | 21.2 | 19.7     | 21.2 | 19.5 | 17.3                                                                                           | 17.1 | 17.3 | 17.3 | 17.5 | 17.3 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 18.5                                                                                         | 17.1 | 18.7 | 17.4     | 18.8 | 17.4 | 15.1                                                                                           | 14.9 | 15.2 | 15.1 | 15.5 | 15.4 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 16.3                                                                                         | 15.1 | 16.5 | 15.3     | 16.7 | 15.3 | 13.1                                                                                           | 13.1 | 13.4 | 13.3 | 13.6 | 13.4 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 14.5                                                                                         | 13.4 | 14.6 | 13.5     | 14.6 | 13.6 | 11.4                                                                                           | 11.4 | 11.7 | 11.7 | 11.9 | 11.9 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 12.4                                                                                         | 11.8 | 12.9 | 12.0     | 12.9 | 12.0 | 10.1                                                                                           | 10.1 | 10.3 | 10.3 | 10.3 | 10.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 10.4                                                                                         | 10.4 | 10.8 | 10.6     | 11.0 | 10.7 | 8.8                                                                                            | 8.8  | 9.0  | 9.0  | 9.0  | 9.0  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 9.0                                                                                          | 8.6  | 9.0  | 9.0      | 9.3  | 9.3  | 7.7                                                                                            | 7.7  | 7.9  | 7.9  | 7.9  | 7.9  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 8.0                                                                                          | 7.5  | 7.5  | 7.5      | 7.6  | 7.6  | 6.6                                                                                            | 6.6  | 6.9  | 6.9  | 6.9  | 6.9  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 6.7                                                                                          | 6.6  | 6.6  | 6.6      | 6.6  | 6.6  | 5.6                                                                                            | 5.6  | 5.8  | 5.8  | 6.0  | 6.0  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 5.4                                                                                          | 5.4  | 5.6  | 5.6      | 5.8  | 5.8  | 4.5                                                                                            | 4.5  | 4.7  | 4.7  | 4.9  | 4.9  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | 4.4                                                                                          | 4.4  | 4.6  | 4.6      | -    | -    | 3.4                                                                                            | 3.4  | 3.6  | 3.6  | 3.7  | 3.7  | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | 3.6                                                                                          | 3.6  | 3.8  | 3.8      | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | 2.8                                                                                          | 2.8  | 3.0  | 3.0      | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 176                                                                                   |  |



# HAV

|  77,200 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360°                                                                                         |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |                                                                                             |      |  126.0 ft |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                        | 1°   | 0,3°                                                                                         | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                         |      | 0°                                                                                           |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                             |      |                                                                                              |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                        | 27.8 | 51.0                                                                                         | 45.2 | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 40.1 | 34.9                                                                                      | 33.3 | 27.5                                                                                        | 26.4 | 49.3                                                                                         | 44.1 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 37.4 | 33.0                                                                                      | 31.5 | 26.0                                                                                        | 24.9 | 47.5                                                                                         | 43.0 | 37.4       | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 34.7                                                                                      | 33.2 | 29.1                                                                                      | 28.1 | 23.5                                                                                        | 22.7 | 42.8                                                                                         | 40.5 | 34.3       | 33.2 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 30.8                                                                                      | 29.6 | 26.2                                                                                      | 25.4 | 22.0                                                                                        | 21.4 | 37.4                                                                                         | 36.7 | 31.6       | 31.4 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 27.2                                                                                      | 26.2 | 24.1                                                                                      | 23.5 | -                                                                                           | -    | 32.3                                                                                         | 32.2 | 29.5       | 29.3 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 28.3                                                                                         | 28.3 | 27.4       | 27.4 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 25.1                                                                                         | 24.9 | 24.8       | 24.7 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 22.0                                                                                         | 22.0 | 22.3       | 22.2 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 19.0                                                                                         | 19.0 | 19.8       | 19.8 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 17.3                                                                                         | 17.3 | 17.2       | 17.2 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 15.1                                                                                         | 15.1 | 14.6       | 14.6 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 13.0                                                                                         | 13.0 | 13.2       | 13.2 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 11.2                                                                                         | 11.2 | 11.8       | 11.8 | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 9.9                                                                                          | 9.9  | 10.1       | 10.1 | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 9.3                                                                                          | 9.3  | 8.9        | 8.7  | 144                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |          |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°       | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |          | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      |      | 1,000 lb |                                                                                                |      |      |      |      | ft   |                                                                                       |  |
| 56                                                                                  |                                                                                     | 25.1                                                                                         | 21.4 | -    | -    | -    | -        | 20.6                                                                                           | 17.0 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 23.3                                                                                         | 21.4 | -    | -    | -    | -        | 19.8                                                                                           | 17.0 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 21.0                                                                                         | 20.3 | 19.9 | 19.9 | -    | -        | 18.3                                                                                           | 17.0 | 17.9 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 18.7                                                                                         | 18.6 | 18.0 | 18.0 | 17.4 | 17.4     | 16.5                                                                                           | 15.7 | 16.3 | 15.9 | 15.7 | 15.7 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 16.7                                                                                         | 16.6 | 16.4 | 16.4 | 16.1 | 16.1     | 14.6                                                                                           | 14.4 | 14.7 | 14.5 | 14.3 | 14.3 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 14.7                                                                                         | 14.7 | 15.0 | 14.8 | 14.7 | 14.7     | 12.8                                                                                           | 12.8 | 13.1 | 13.1 | 13.1 | 13.0 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 13.0                                                                                         | 13.0 | 13.4 | 13.4 | 13.4 | 13.4     | 11.2                                                                                           | 11.2 | 11.6 | 11.6 | 11.9 | 11.8 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 11.6                                                                                         | 11.6 | 12.0 | 12.0 | 12.3 | 12.0     | 9.8                                                                                            | 9.8  | 10.3 | 10.3 | 10.5 | 10.5 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 10.3                                                                                         | 10.3 | 10.7 | 10.5 | 10.8 | 10.8     | 8.6                                                                                            | 8.6  | 9.0  | 9.0  | 9.2  | 9.2  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 9.1                                                                                          | 9.0  | 9.5  | 9.5  | 9.6  | 9.6      | 7.5                                                                                            | 7.5  | 7.9  | 7.9  | 8.2  | 8.2  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 7.8                                                                                          | 7.8  | 8.4  | 8.4  | 8.6  | 8.6      | 6.6                                                                                            | 6.6  | 6.9  | 6.9  | 7.1  | 7.1  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 6.5                                                                                          | 6.5  | 7.1  | 7.1  | 7.5  | 7.5      | 5.8                                                                                            | 5.6  | 6.0  | 6.0  | 6.2  | 6.2  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 5.4                                                                                          | 5.4  | 5.8  | 5.8  | 6.2  | 6.2      | 4.9                                                                                            | 4.7  | 5.2  | 5.2  | 5.4  | 5.4  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | 4.8                                                                                          | 4.8  | 5.0  | 5.0  | 5.1  | 5.1      | 3.9                                                                                            | 3.9  | 4.4  | 4.4  | 4.6  | 4.6  | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | 4.0                                                                                          | 4.0  | 4.2  | 4.2  | 4.5  | 4.5      | -                                                                                              | -    | 3.5  | 3.5  | 3.7  | 3.7  | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | 3.2                                                                                          | 3.2  | 3.4  | 3.4  | 3.6  | 3.6      | -                                                                                              | -    | 2.6  | 2.6  | 2.8  | 2.8  | 176                                                                                   |  |

# HAV

|  77,200 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360°                                                                                         |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |                                                                                             |      |  126.0 ft |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                        | 1°   | 0,3°                                                                                         | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                         |      | 0°                                                                                           |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                             |      |                                                                                              |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 49.3                                                                                      | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 47.3                                                                                      | 41.7 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 45.5                                                                                      | 40.4 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 43.6                                                                                      | 39.0 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 40.0                                                                                      | 36.3 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 36.8                                                                                      | 33.8 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 34.1                                                                                      | 31.5 | 26.4                                                                                      | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 31.7                                                                                      | 29.5 | 24.8                                                                                      | 23.6 | -                                                                                           | -    | 33.9                                                                                         | 28.3 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 29.5                                                                                      | 27.5 | 23.4                                                                                      | 22.3 | -                                                                                           | -    | 32.9                                                                                         | 27.7 | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 25.8                                                                                      | 24.4 | 21.0                                                                                      | 20.1 | 16.1                                                                                        | 15.5 | 30.8                                                                                         | 26.3 | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 22.9                                                                                      | 21.7 | 18.9                                                                                      | 17.9 | 14.6                                                                                        | 14.1 | 28.9                                                                                         | 25.0 | 22.1       | 20.7 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 20.3                                                                                      | 19.2 | 16.9                                                                                      | 16.2 | 13.4                                                                                        | 13.0 | 27.1                                                                                         | 23.8 | 20.8       | 19.5 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | 18.1                                                                                      | 17.2 | 15.5                                                                                      | 14.8 | 12.6                                                                                        | 12.1 | 25.4                                                                                         | 22.5 | 19.6       | 18.3 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | 16.3                                                                                      | 15.7 | 14.2                                                                                      | 13.8 | -                                                                                           | -    | 23.5                                                                                         | 21.2 | 18.3       | 17.3 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 21.4                                                                                         | 19.7 | 17.3       | 16.5 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 19.4                                                                                         | 18.0 | 16.3       | 15.7 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 17.1                                                                                         | 16.1 | 15.3       | 14.9 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 14.9                                                                                         | 14.4 | 14.5       | 14.3 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 12.8                                                                                         | 12.6 | 13.4       | 13.4 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 11.6                                                                                         | 11.0 | 11.8       | 11.8 | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 10.4                                                                                         | 10.1 | 10.3       | 10.3 | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 9.1                                                                                          | 9.1  | 9.1        | 9.1  | 144                                                                                 |     |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 8.0                                                                                          | 8.0  | 8.5        | 8.5  | 152                                                                                 |     |
| 160                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 6.9                                                                                          | 6.9  | 7.4        | 7.4  | 160                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 19.6                                                                                         | 15.7 | -    | -    | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 19.2                                                                                         | 15.7 | -    | -    | -    | -    | 15.8                                                                                           | 12.6 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 18.8                                                                                         | 15.7 | -    | -    | -    | -    | 15.4                                                                                           | 12.6 | -    | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 17.4                                                                                         | 15.7 | 15.5 | 15.3 | -    | -    | 14.9                                                                                           | 12.6 | 14.2 | -    | -    | -    | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 15.8                                                                                         | 15.4 | 14.5 | 14.4 | 12.8 | 12.0 | 13.9                                                                                           | 12.5 | 13.1 | 12.5 | -    | -    | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 14.3                                                                                         | 14.2 | 13.6 | 13.5 | 12.3 | 11.8 | 12.4                                                                                           | 12.1 | 12.0 | 11.9 | 11.2 | 11.2 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 12.8                                                                                         | 12.7 | 12.5 | 12.5 | 11.8 | 11.5 | 11.0                                                                                           | 11.0 | 11.1 | 10.9 | 10.6 | 10.6 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 11.4                                                                                         | 11.4 | 11.6 | 11.4 | 11.2 | 11.0 | 9.6                                                                                            | 9.6  | 10.1 | 10.1 | 9.9  | 9.9  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 10.3                                                                                         | 10.1 | 10.5 | 10.5 | 10.4 | 10.4 | 8.6                                                                                            | 8.6  | 9.0  | 9.0  | 9.1  | 9.1  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 9.0                                                                                          | 9.0  | 9.5  | 9.5  | 9.6  | 9.6  | 7.5                                                                                            | 7.5  | 8.0  | 7.9  | 8.3  | 8.3  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 8.0                                                                                          | 8.0  | 8.4  | 8.4  | 8.8  | 8.6  | 6.6                                                                                            | 6.4  | 7.1  | 7.0  | 7.5  | 7.5  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 7.1                                                                                          | 7.1  | 7.5  | 7.5  | 7.8  | 7.8  | 5.6                                                                                            | 5.5  | 6.2  | 6.2  | 6.4  | 6.4  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 6.0                                                                                          | 6.0  | 6.7  | 6.7  | 6.9  | 6.9  | 4.8                                                                                            | 4.8  | 5.4  | 5.4  | 5.6  | 5.6  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | 5.0                                                                                          | 5.0  | 5.8  | 5.7  | 6.1  | 6.1  | 4.2                                                                                            | 4.2  | 4.6  | 4.6  | 4.8  | 4.8  | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | 4.1                                                                                          | 4.1  | 4.8  | 4.8  | 5.3  | 5.3  | 3.4                                                                                            | 3.4  | 3.9  | 3.9  | 4.1  | 4.1  | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | 3.6                                                                                          | 3.6  | 3.9  | 3.9  | 4.3  | 4.3  | 2.7                                                                                            | 2.7  | 3.4  | 3.2  | 3.4  | 3.4  | 176                                                                                   |  |
| 184                                                                                 |                                                                                     | 3.0                                                                                          | 3.0  | 3.3  | 3.3  | 3.4  | 3.4  | -                                                                                              | -    | -    | -    | 2.8  | 2.8  | 184                                                                                   |  |



# HAV

|  77,200 lb +  33,100 lb |      |  75.5 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |     |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-----|-------------------------------------------------------------------------------------|-----|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |     |  |     |
|                                                                                                                                                                                           |      | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°  |                                                                                     |     |
|                                                                                                                                                                                           |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |     | 36°                                                                                 |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |     | ft                                                                                  |     |
| 18                                                                                                                                                                                        | 32.9 | -                                                                                         |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | -                                                                                   | 18  |
| 20                                                                                                                                                                                        | 32.1 | 26.6                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | -                                                                                   | 20  |
| 24                                                                                                                                                                                        | 30.4 | 25.4                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | -                                                                                   | 24  |
| 28                                                                                                                                                                                        | 28.7 | 24.2                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | -                                                                                   | 28  |
| 32                                                                                                                                                                                        | 26.8 | 23.0                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | -                                                                                   | 32  |
| 36                                                                                                                                                                                        | 25.2 | 21.7                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | -                                                                                   | 36  |
| 40                                                                                                                                                                                        | 23.6 | 20.6                                                                                      | 19.0 | -                                                                                         | -    | -                                                                                            | 22.2 | 19.8 | -    | -          | -   | -                                                                                   | 40  |
| 48                                                                                                                                                                                        | 20.9 | 18.5                                                                                      | 16.7 | 15.6                                                                                      | -    | -                                                                                            | 21.2 | 19.0 | -    | -          | -   | -                                                                                   | 48  |
| 56                                                                                                                                                                                        | 18.5 | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -    | -                                                                                            | 20.3 | 18.2 | -    | -          | -   | -                                                                                   | 56  |
| 64                                                                                                                                                                                        | 16.3 | 15.1                                                                                      | 13.3 | 12.6                                                                                      | 10.1 | 9.9                                                                                          | 19.2 | 17.4 | 15.0 | -          | -   | -                                                                                   | 64  |
| 72                                                                                                                                                                                        | 14.6 | 13.5                                                                                      | 11.9 | 11.5                                                                                      | 9.3  | 9.1                                                                                          | 18.1 | 16.6 | 14.1 | 13.0       | -   | -                                                                                   | 72  |
| 80                                                                                                                                                                                        | 13.0 | 12.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7  | 8.3                                                                                          | 17.0 | 15.7 | 13.3 | 12.3       | 9.6 | 9.2                                                                                 | 80  |
| 88                                                                                                                                                                                        | 11.8 | 11.1                                                                                      | 10.1 | 9.6                                                                                       | 8.1  | 7.8                                                                                          | 16.0 | 14.8 | 12.5 | 11.7       | 9.2 | 8.7                                                                                 | 88  |
| 96                                                                                                                                                                                        | 10.8 | 10.2                                                                                      | 9.3  | 9.0                                                                                       | 7.7  | 7.4                                                                                          | 15.1 | 13.9 | 11.7 | 11.0       | 8.8 | 8.3                                                                                 | 96  |
| 104                                                                                                                                                                                       | 10.0 | 9.4                                                                                       | 8.7  | 8.4                                                                                       | -    | -                                                                                            | 14.2 | 13.3 | 11.1 | 10.4       | 8.4 | 8.0                                                                                 | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.4 | 12.5 | 10.6 | 10.1       | 8.1 | 7.7                                                                                 | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.5 | 11.8 | 10.1 | 9.6        | 7.9 | 7.4                                                                                 | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.2 | 11.0 | 9.7  | 9.1        | 7.6 | 7.3                                                                                 | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.8  | 9.8  | 9.3  | 8.9        | 7.3 | 7.1                                                                                 | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.4  | 8.4  | 8.8  | 8.6        | 7.3 | 6.8                                                                                 | 144 |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.4  | 7.4  | 8.2  | 8.0        | 7.1 | 6.8                                                                                 | 152 |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.9  | 6.9  | 7.2  | 7.2        | 7.1 | 6.8                                                                                 | 160 |
| 168                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.2  | 6.2  | 6.2  | 6.2        | -   | -                                                                                   | 168 |
| 176                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.4  | 5.4  | 5.8  | 5.8        | -   | -                                                                                   | 176 |
| 184                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.6  | 4.6  | -    | -          | -   | -                                                                                   | 184 |

|   |      |  181.1 ft |      |      |     |      |      |  196.9 ft |      |      |     |      |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|-----|------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|----|---------------------------------------------------------------------------------------|
|                                                                                                                                                                         |      | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1° |                                                                                       |
| 0°                                                                                                                                                                      |      | 18°                                                                                          |      | 36°  |     | 0°   |      | 18°                                                                                            |      | 36°  |     |      |    |                                                                                       |
| ft                                                                                                                                                                      |      | 1,000 lb                                                                                     |      |      |     |      |      |                                                                                                |      |      |     | ft   |    |                                                                                       |
| 64                                                                                                                                                                      | 14.4 | 11.2                                                                                         | -    | -    | -   | -    | -    | -                                                                                              | -    | -    | -   | 64   |    |                                                                                       |
| 72                                                                                                                                                                      | 14.1 | 11.2                                                                                         | -    | -    | -   | -    | 11.7 | 8.8                                                                                            | -    | -    | -   | 72   |    |                                                                                       |
| 80                                                                                                                                                                      | 13.8 | 11.2                                                                                         | -    | -    | -   | -    | 11.4 | 8.8                                                                                            | -    | -    | -   | 80   |    |                                                                                       |
| 88                                                                                                                                                                      | 13.5 | 11.2                                                                                         | 11.5 | 10.6 | -   | -    | 11.2 | 8.8                                                                                            | -    | -    | -   | 88   |    |                                                                                       |
| 96                                                                                                                                                                      | 12.8 | 11.2                                                                                         | 11.0 | 10.2 | -   | -    | 10.9 | 8.8                                                                                            | 10.3 | -    | -   | 96   |    |                                                                                       |
| 104                                                                                                                                                                     | 11.8 | 11.2                                                                                         | 10.4 | 9.8  | 8.2 | -    | 10.2 | 8.8                                                                                            | 9.6  | 8.8  | -   | 104  |    |                                                                                       |
| 112                                                                                                                                                                     | 10.7 | 10.5                                                                                         | 9.9  | 9.5  | 7.9 | 7.5  | 9.2  | 8.8                                                                                            | 9.0  | 8.8  | 7.7 | 112  |    |                                                                                       |
| 120                                                                                                                                                                     | 9.7  | 9.7                                                                                          | 9.4  | 9.1  | 7.7 | 7.2  | 8.2  | 8.1                                                                                            | 8.3  | 8.3  | 7.7 | 120  |    |                                                                                       |
| 128                                                                                                                                                                     | 8.8  | 8.7                                                                                          | 8.7  | 8.6  | 7.5 | 7.1  | 7.3  | 7.2                                                                                            | 7.6  | 7.6  | 7.3 | 128  |    |                                                                                       |
| 136                                                                                                                                                                     | 7.7  | 7.7                                                                                          | 8.1  | 8.1  | 7.3 | 6.9  | 6.4  | 6.2                                                                                            | 6.8  | 6.8  | 6.9 | 136  |    |                                                                                       |
| 144                                                                                                                                                                     | 6.9  | 6.9                                                                                          | 7.3  | 7.3  | 7.1 | 6.8  | 5.5  | 5.3                                                                                            | 6.0  | 6.0  | 6.4 | 144  |    |                                                                                       |
| 152                                                                                                                                                                     | 6.0  | 6.0                                                                                          | 6.5  | 6.5  | 6.7 | 6.4  | 4.6  | 4.6                                                                                            | 5.4  | 5.4  | 5.7 | 152  |    |                                                                                       |
| 160                                                                                                                                                                     | 5.0  | 5.0                                                                                          | 5.8  | 5.8  | 6.0 | 6.0  | 3.9  | 3.9                                                                                            | 4.6  | 4.6  | 5.0 | 160  |    |                                                                                       |
| 168                                                                                                                                                                     | 4.2  | 4.2                                                                                          | 5.1  | 5.1  | 5.4 | 5.4  | 3.3  | 3.3                                                                                            | 3.9  | 3.9  | 4.3 | 168  |    |                                                                                       |
| 176                                                                                                                                                                     | 3.2  | 3.2                                                                                          | 4.3  | 4.3  | 4.7 | 4.7  | 2.7  | 2.7                                                                                            | 3.2  | 3.2  | 3.6 | 176  |    |                                                                                       |
| 184                                                                                                                                                                     | 2.7  | 2.7                                                                                          | 3.4  | 3.4  | 3.9 | 3.9  | -    | -                                                                                              | 2.6  | 2.6  | 3.1 | 184  |    |                                                                                       |



# HAV

|  55,100 lb +  33,100 lb |             |  16.4 ft |           |  19.7 ft    |           |  32.2 ft/s |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |             |  42.3 ft |           |  126.0 ft |           |                                                                                             |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |             | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                     | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |             | 18°                                                                                       | 36°       | 0°                                                                                           | 18°       | 36°                                                                                         | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |             | 1,000 lb                                                                                  |           |                                                                                              |           |                                                                                             |         |         |         | ft         |     |
| 10                                                                                                                                                                                        | 119.2 111.6 | 89.3 -                                                                                    | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 10  |
| 12                                                                                                                                                                                        | 113.1 106.0 | 86.0 82.2                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 12  |
| 14                                                                                                                                                                                        | 107.3 101.1 | 83.0 79.5                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 14  |
| 16                                                                                                                                                                                        | 102.0 96.4  | 80.3 77.0                                                                                 | 67.3 64.9 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 16  |
| 18                                                                                                                                                                                        | 97.4 92.4   | 77.9 74.8                                                                                 | 65.7 63.6 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 18  |
| 20                                                                                                                                                                                        | 93.1 88.6   | 75.5 72.7                                                                                 | 64.1 62.4 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 20  |
| 24                                                                                                                                                                                        | 85.9 82.2   | 71.6 69.3                                                                                 | 60.5 59.4 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 24  |
| 28                                                                                                                                                                                        | 79.8 76.7   | 67.8 65.9                                                                                 | 57.5 56.6 | 75.2 68.1                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 28  |
| 32                                                                                                                                                                                        | 74.6 71.9   | 63.6 62.4                                                                                 | 54.9 54.2 | 67.2 66.1                                                                                    | 62.9 -    | - -                                                                                         | - -     | - -     | - -     | - -        | 32  |
| 36                                                                                                                                                                                        | 69.8 67.7   | 59.7 58.8                                                                                 | 53.3 52.6 | 61.1 61.0                                                                                    | 58.8 58.6 | 51.1 -                                                                                      | - -     | - -     | - -     | - -        | 36  |
| 40                                                                                                                                                                                        | 64.9 63.4   | 56.1 55.4                                                                                 | - -       | 55.5 55.5                                                                                    | 54.6 54.4 | 49.0 49.0                                                                                   | - -     | - -     | - -     | - -        | 40  |
| 48                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 46.8 46.1                                                                                    | 46.0 45.9 | 44.1 44.0                                                                                   | - -     | - -     | - -     | - -        | 48  |
| 56                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 38.5 38.0                                                                                    | 38.9 38.9 | 38.6 38.5                                                                                   | - -     | - -     | - -     | - -        | 56  |
| 64                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 32.3 32.1                                                                                    | 31.7 31.5 | 32.1 32.1                                                                                   | - -     | - -     | - -     | - -        | 64  |
| 72                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 26.1 26.1                                                                                    | 27.0 27.0 | 27.4 27.4                                                                                   | - -     | - -     | - -     | - -        | 72  |
| 80                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 21.6 21.6                                                                                    | 22.3 22.3 | 22.7 22.7                                                                                   | - -     | - -     | - -     | - -        | 80  |
| 88                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 18.9 18.9                                                                                    | 18.4 18.4 | 18.9 18.9                                                                                   | - -     | - -     | - -     | - -        | 88  |
| 96                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 16.7 16.7                                                                                    | 16.7 16.7 | 16.8 16.8                                                                                   | - -     | - -     | - -     | - -        | 96  |
| 104                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 14.2 14.2                                                                                    | 14.4 14.4 | 14.6 14.6                                                                                   | - -     | - -     | - -     | - -        | 104 |
| 112                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 12.0 12.0                                                                                    | 12.2 12.2 | - -                                                                                         | - -     | - -     | - -     | - -        | 112 |
| 120                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 10.3 10.3                                                                                    | 10.4 10.4 | - -                                                                                         | - -     | - -     | - -     | - -        | 120 |
| 128                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 9.3 9.3                                                                                      | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 128 |

|   |           |  181.1 ft |           |  196.9 ft |           |           |         |         |         |     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------|-----------|-----------|---------|---------|---------|-----|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1°   | 0,3° 1°   | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°                                                                                             | 18°       | 36°       | 0°      | 18°     | 36°     |     |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |                                                                                                |           |           |         |         |         | ft  |     |
| 48                                                                                                                                                                      | 35.2 28.7 | - -                                                                                          | - -       | 26.6 -                                                                                         | - -       | - -       | - -     | - -     | - -     | - - | 48  |
| 56                                                                                                                                                                      | 31.2 27.8 | 30.4 27.5                                                                                    | 29.7 -    | 25.0 22.5                                                                                      | 25.1 -    | - -       | - -     | - -     | - -     | - - | 56  |
| 64                                                                                                                                                                      | 27.4 25.3 | 26.9 25.0                                                                                    | 26.6 24.6 | 22.4 21.3                                                                                      | 22.2 21.4 | 22.1 21.4 | - -     | - -     | - -     | - - | 64  |
| 72                                                                                                                                                                      | 24.1 22.3 | 23.9 22.1                                                                                    | 23.9 22.1 | 19.7 19.2                                                                                      | 19.7 19.4 | 19.5 19.4 | - -     | - -     | - -     | - - | 72  |
| 80                                                                                                                                                                      | 19.9 19.4 | 20.7 19.7                                                                                    | 21.1 19.5 | 17.3 17.1                                                                                      | 17.3 17.3 | 17.5 17.3 | - -     | - -     | - -     | - - | 80  |
| 88                                                                                                                                                                      | 16.3 16.3 | 17.0 17.0                                                                                    | 17.6 17.2 | 15.1 14.9                                                                                      | 15.2 15.1 | 15.5 15.4 | - -     | - -     | - -     | - - | 88  |
| 96                                                                                                                                                                      | 13.9 13.2 | 13.9 13.9                                                                                    | 14.3 14.3 | 13.0 12.9                                                                                      | 13.4 13.3 | 13.6 13.4 | - -     | - -     | - -     | - - | 96  |
| 104                                                                                                                                                                     | 11.5 11.4 | 11.9 11.7                                                                                    | 11.9 11.9 | 10.7 10.7                                                                                      | 11.1 11.1 | 11.5 11.5 | - -     | - -     | - -     | - - | 104 |
| 112                                                                                                                                                                     | 9.6 9.6   | 10.0 10.0                                                                                    | 10.3 10.3 | 8.5 8.5                                                                                        | 8.9 8.9   | 9.4 9.4   | - -     | - -     | - -     | - - | 112 |
| 120                                                                                                                                                                     | 7.8 7.8   | 8.2 8.2                                                                                      | 8.4 8.4   | 6.7 6.7                                                                                        | 7.1 7.1   | 7.5 7.5   | - -     | - -     | - -     | - - | 120 |
| 128                                                                                                                                                                     | 6.3 6.3   | 6.6 6.6                                                                                      | 6.8 6.8   | 5.2 5.2                                                                                        | 5.6 5.6   | 5.8 5.8   | - -     | - -     | - -     | - - | 128 |
| 136                                                                                                                                                                     | 4.9 4.9   | 5.2 5.2                                                                                      | 5.4 5.4   | 3.8 3.8                                                                                        | 4.3 4.3   | 4.5 4.5   | - -     | - -     | - -     | - - | 136 |
| 144                                                                                                                                                                     | 3.8 3.8   | 4.0 4.0                                                                                      | 4.2 4.2   | 2.7 2.7                                                                                        | 2.9 2.9   | 3.1 3.1   | - -     | - -     | - -     | - - | 144 |
| 152                                                                                                                                                                     | - -       | 3.0 3.0                                                                                      | 3.2 3.2   | - -                                                                                            | - -       | - -       | - -     | - -     | - -     | - - | 152 |



# HAV

|  55,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                         | 27.8 | 51.0 | 45.2 | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 40.1 | 34.9                                                                                      | 33.3 | 27.5                                                                                         | 26.4 | 49.3 | 44.1 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 37.4 | 33.0                                                                                      | 31.5 | 26.0                                                                                         | 24.9 | 47.5 | 43.0 | 37.4       | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 34.7                                                                                      | 33.2 | 29.1                                                                                      | 28.1 | 23.5                                                                                         | 22.7 | 42.8 | 40.5 | 34.3       | 33.2 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 30.8                                                                                      | 29.6 | 26.2                                                                                      | 25.4 | 22.0                                                                                         | 21.4 | 37.4 | 36.7 | 31.6       | 31.4 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 27.2                                                                                      | 26.2 | 24.1                                                                                      | 23.5 | -                                                                                            | -    | 31.6 | 31.2 | 29.5       | 29.3 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 26.1 | 26.1 | 27.4       | 27.4 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 21.8 | 21.8 | 23.1       | 23.1 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 19.0 | 19.0 | 19.1       | 19.1 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.9 | 15.9 | 16.0       | 16.0 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.8 | 13.8 | 14.3       | 14.3 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.5 | 12.5 | 12.5       | 12.0 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.1 | 11.1 | 10.9       | 10.6 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.5  | 9.5  | 9.7        | 9.7  | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.2  | 8.2  | 8.5        | 8.5  | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.1  | 7.1  | 7.3        | 7.3  | 144                                                                                 |     |

|   |           |  181.1 ft |           |           |           |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°   | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°        | 18°       | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |           |           |                                                                                                |         |         |         | ft                                                                                    |     |
| 56                                                                                                                                                                      | 25.1 21.4 | - -                                                                                          | - -       | 20.6 17.0 | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 56  |
| 64                                                                                                                                                                      | 23.3 21.4 | - -                                                                                          | - -       | 19.8 17.0 | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 64  |
| 72                                                                                                                                                                      | 21.0 20.3 | 19.9 19.9                                                                                    | - -       | 18.3 17.0 | 17.9 -    | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 72  |
| 80                                                                                                                                                                      | 18.7 18.6 | 18.0 18.0                                                                                    | 17.4 17.4 | 16.5 15.7 | 16.3 15.9 | 15.7 15.7                                                                                      | - -     | - -     | - -     | - -                                                                                   | 80  |
| 88                                                                                                                                                                      | 16.6 16.5 | 16.4 16.4                                                                                    | 16.1 16.1 | 14.6 14.4 | 14.7 14.5 | 14.3 14.3                                                                                      | - -     | - -     | - -     | - -                                                                                   | 88  |
| 96                                                                                                                                                                      | 14.0 14.0 | 15.0 14.8                                                                                    | 14.7 14.7 | 12.8 12.8 | 13.1 13.1 | 13.1 13.0                                                                                      | - -     | - -     | - -     | - -                                                                                   | 96  |
| 104                                                                                                                                                                     | 11.5 11.5 | 12.9 12.8                                                                                    | 13.4 13.4 | 11.0 11.0 | 11.6 11.6 | 11.9 11.8                                                                                      | - -     | - -     | - -     | - -                                                                                   | 104 |
| 112                                                                                                                                                                     | 9.8 9.8   | 10.5 10.5                                                                                    | 11.4 11.4 | 9.2 9.2   | 10.3 10.3 | 10.5 10.5                                                                                      | - -     | - -     | - -     | - -                                                                                   | 112 |
| 120                                                                                                                                                                     | 8.4 8.4   | 9.0 9.0                                                                                      | 9.5 9.5   | 7.3 7.3   | 8.4 8.4   | 9.1 9.1                                                                                        | - -     | - -     | - -     | - -                                                                                   | 120 |
| 128                                                                                                                                                                     | 6.9 6.9   | 7.7 7.7                                                                                      | 8.0 8.0   | 5.8 5.8   | 6.8 6.8   | 7.5 7.5                                                                                        | - -     | - -     | - -     | - -                                                                                   | 128 |
| 136                                                                                                                                                                     | 5.6 5.6   | 6.3 6.3                                                                                      | 6.8 6.8   | 4.5 4.5   | 5.4 5.4   | 6.0 6.0                                                                                        | - -     | - -     | - -     | - -                                                                                   | 136 |
| 144                                                                                                                                                                     | 4.2 4.2   | 4.9 4.9                                                                                      | 5.6 5.6   | 3.4 3.4   | 4.0 4.0   | 4.7 4.7                                                                                        | - -     | - -     | - -     | - -                                                                                   | 144 |
| 152                                                                                                                                                                     | 3.4 3.4   | 3.8 3.8                                                                                      | 4.3 4.3   | - -       | 2.9 2.9   | 3.4 3.4                                                                                        | - -     | - -     | - -     | - -                                                                                   | 152 |
| 160                                                                                                                                                                     | - -       | 2.8 2.8                                                                                      | 3.2 3.2   | - -       | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 160 |





# HAV

|  55,100 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        | 49.3                                                                              | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        | 47.3                                                                              | 41.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        | 45.5                                                                              | 40.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        | 43.6                                                                              | 39.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        | 40.0                                                                              | 36.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        | 36.8                                                                              | 33.8                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        | 34.1                                                                              | 31.5                                                                                      | 26.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        | 31.7                                                                              | 29.5                                                                                      | 24.8 | 23.6                                                                                      | -    | -                                                                                            | 33.9 | 28.3 | -    | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        | 29.5                                                                              | 27.5                                                                                      | 23.4 | 22.3                                                                                      | -    | -                                                                                            | 32.9 | 27.7 | -    | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        | 25.8                                                                              | 24.4                                                                                      | 21.0 | 20.1                                                                                      | 16.1 | 15.5                                                                                         | 30.8 | 26.3 | -    | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        | 22.9                                                                              | 21.7                                                                                      | 18.9 | 17.9                                                                                      | 14.6 | 14.1                                                                                         | 28.9 | 25.0 | 22.1 | 20.7       | -    | 56                                                                                  |     |
| 64                                                                                                                                                                                        | 20.3                                                                              | 19.2                                                                                      | 16.9 | 16.2                                                                                      | 13.4 | 13.0                                                                                         | 27.1 | 23.8 | 20.8 | 19.5       | -    | 64                                                                                  |     |
| 72                                                                                                                                                                                        | 18.1                                                                              | 17.2                                                                                      | 15.5 | 14.8                                                                                      | 12.6 | 12.1                                                                                         | 25.4 | 22.5 | 19.6 | 18.3       | 14.3 | 13.7                                                                                | 72  |
| 80                                                                                                                                                                                        | 16.3                                                                              | 15.7                                                                                      | 14.2 | 13.8                                                                                      | -    | -                                                                                            | 22.6 | 21.0 | 18.3 | 17.3       | 13.8 | 13.1                                                                                | 80  |
| 88                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 19.0 | 18.6 | 17.3 | 16.5       | 13.3 | 12.6                                                                                | 88  |
| 96                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.9 | 15.9 | 16.3 | 15.7       | 12.7 | 12.2                                                                                | 96  |
| 104                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.2 | 13.4 | 14.7 | 14.7       | 12.4 | 11.9                                                                                | 104 |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.2 | 12.2 | 12.7 | 12.7       | 11.9 | 11.4                                                                                | 112 |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.5 | 10.4 | 10.6 | 10.6       | 11.3 | 11.0                                                                                | 120 |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.5  | 8.9  | 9.7  | 9.7        | 9.7  | 9.7                                                                                 | 128 |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.2  | 8.1  | 8.3  | 8.3        | 8.8  | 8.8                                                                                 | 136 |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.5  | 7.5  | 7.5  | 7.5        | 7.5  | 7.5                                                                                 | 144 |
| 152                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.5  | 6.5  | 6.9  | 6.9        | -    | -                                                                                   | 152 |
| 160                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.7  | 5.7  | 6.1  | 6.1        | -    | -                                                                                   | 160 |

|   |      |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |   |  |      |     |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|---|---------------------------------------------------------------------------------------|------|-----|----|--|
|                                                                                                                                                                         |      | 0,3°                                                                                         |      | 1°   |      | 0,3°     |      | 1°                                                                                             |      | 0,3° |      | 1°   |   |                                                                                       | 0,3° |     | 1° |  |
|                                                                                                                                                                         |      | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |   |                                                                                       |      |     |    |  |
| ft                                                                                                                                                                      |      |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      |      |   |                                                                                       |      | ft  |    |  |
| 56                                                                                                                                                                      | 19.6 | 15.7                                                                                         | -    | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | - | -                                                                                     | -    | 56  |    |  |
| 64                                                                                                                                                                      | 19.2 | 15.7                                                                                         | -    | -    | -    | -        | 15.8 | 12.6                                                                                           | -    | -    | -    | -    | - | -                                                                                     | -    | 64  |    |  |
| 72                                                                                                                                                                      | 18.8 | 15.7                                                                                         | -    | -    | -    | -        | 15.4 | 12.6                                                                                           | -    | -    | -    | -    | - | -                                                                                     | -    | 72  |    |  |
| 80                                                                                                                                                                      | 17.4 | 15.7                                                                                         | 15.5 | 15.3 | -    | -        | 14.9 | 12.6                                                                                           | 14.2 | -    | -    | -    | - | -                                                                                     | -    | 80  |    |  |
| 88                                                                                                                                                                      | 15.8 | 15.4                                                                                         | 14.5 | 14.4 | 12.8 | 12.0     | 13.9 | 12.5                                                                                           | 13.1 | 12.5 | -    | -    | - | -                                                                                     | -    | 88  |    |  |
| 96                                                                                                                                                                      | 14.0 | 14.0                                                                                         | 13.6 | 13.5 | 12.3 | 11.8     | 12.4 | 12.1                                                                                           | 12.0 | 11.9 | 11.2 | 11.2 | - | -                                                                                     | -    | 96  |    |  |
| 104                                                                                                                                                                     | 11.9 | 11.9                                                                                         | 12.5 | 12.5 | 11.8 | 11.5     | 11.0 | 11.0                                                                                           | 11.1 | 10.9 | 10.6 | 10.6 | - | -                                                                                     | -    | 104 |    |  |
| 112                                                                                                                                                                     | 10.0 | 10.0                                                                                         | 11.6 | 11.4 | 11.2 | 11.0     | 9.2  | 9.2                                                                                            | 10.1 | 10.1 | 9.9  | 9.9  | - | -                                                                                     | -    | 112 |    |  |
| 120                                                                                                                                                                     | 8.4  | 8.3                                                                                          | 10.0 | 10.0 | 10.4 | 10.4     | 7.6  | 7.6                                                                                            | 9.0  | 9.0  | 9.1  | 9.1  | - | -                                                                                     | -    | 120 |    |  |
| 128                                                                                                                                                                     | 7.5  | 7.4                                                                                          | 8.4  | 8.4  | 9.4  | 9.4      | 6.3  | 6.3                                                                                            | 7.8  | 7.8  | 8.3  | 8.3  | - | -                                                                                     | -    | 128 |    |  |
| 136                                                                                                                                                                     | 6.3  | 6.3                                                                                          | 7.0  | 6.8  | 7.9  | 7.9      | 4.9  | 4.9                                                                                            | 6.5  | 6.5  | 7.5  | 7.5  | - | -                                                                                     | -    | 136 |    |  |
| 144                                                                                                                                                                     | 5.1  | 5.1                                                                                          | 6.2  | 6.2  | 6.5  | 6.5      | 3.8  | 3.8                                                                                            | 5.1  | 5.1  | 6.2  | 6.2  | - | -                                                                                     | -    | 144 |    |  |
| 152                                                                                                                                                                     | 4.0  | 4.0                                                                                          | 4.9  | 4.9  | 5.6  | 5.6      | 3.0  | 3.0                                                                                            | 4.0  | 4.0  | 4.9  | 4.9  | - | -                                                                                     | -    | 152 |    |  |
| 160                                                                                                                                                                     | 3.1  | 3.1                                                                                          | 3.9  | 3.9  | 4.5  | 4.5      | -    | -                                                                                              | 3.1  | 3.1  | 3.9  | 3.9  | - | -                                                                                     | -    | 160 |    |  |
| 168                                                                                                                                                                     | -    | -                                                                                            | -    | -    | 3.5  | 3.5      | -    | -                                                                                              | -    | -    | -    | -    | - | -                                                                                     | -    | 168 |    |  |
| 176                                                                                                                                                                     | -    | -                                                                                            | -    | -    | 2.6  | 2.6      | -    | -                                                                                              | -    | -    | -    | -    | - | -                                                                                     | -    | 176 |    |  |



# HAV

|  55,100 lb +  33,100 lb |      |          |  75.5 ft |         |  19.7 ft |         |  32.2 ft/s  |         | 360°    |         | ASME B30.5 |  |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------|--|-------------------------------------------------------------------------------------|--|
|                         |      |          |  42.3 ft |         |                                                                                           |         |  126.0 ft |         |         |         |            |  |  |  |
| 0,3° 1°                                                                                                                                                                                   |      | 0,3° 1°  | 0,3° 1°                                                                                   | 0,3° 1° | 0,3° 1°                                                                                   | 0,3° 1° | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |  |                                                                                     |  |
| 0°                                                                                                                                                                                        |      | 18°      | 36°                                                                                       | 0°      | 18°                                                                                       | 36°     | 0°                                                                                           | 18°     | 36°     |         |            |  |                                                                                     |  |
| ft                                                                                                                                                                                        |      | 1,000 lb |                                                                                           |         |                                                                                           |         |                                                                                              |         |         | ft      |            |  |                                                                                     |  |
| 18                                                                                                                                                                                        | 32.9 | -        | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 18         |  |                                                                                     |  |
| 20                                                                                                                                                                                        | 32.1 | 26.6     | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 20         |  |                                                                                     |  |
| 24                                                                                                                                                                                        | 30.4 | 25.4     | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 24         |  |                                                                                     |  |
| 28                                                                                                                                                                                        | 28.7 | 24.2     | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 28         |  |                                                                                     |  |
| 32                                                                                                                                                                                        | 26.8 | 23.0     | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 32         |  |                                                                                     |  |
| 36                                                                                                                                                                                        | 25.2 | 21.7     | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 36         |  |                                                                                     |  |
| 40                                                                                                                                                                                        | 23.6 | 20.6     | 19.0                                                                                      | -       | -                                                                                         | -       | 22.2                                                                                         | 19.8    | -       | -       | 40         |  |                                                                                     |  |
| 48                                                                                                                                                                                        | 20.9 | 18.5     | 16.7                                                                                      | 15.6    | -                                                                                         | -       | 21.2                                                                                         | 19.0    | -       | -       | 48         |  |                                                                                     |  |
| 56                                                                                                                                                                                        | 18.5 | 16.7     | 14.8                                                                                      | 14.0    | -                                                                                         | -       | 20.3                                                                                         | 18.2    | -       | -       | 56         |  |                                                                                     |  |
| 64                                                                                                                                                                                        | 16.3 | 15.1     | 13.3                                                                                      | 12.6    | 10.1                                                                                      | 9.9     | 19.2                                                                                         | 17.4    | 15.0    | -       | 64         |  |                                                                                     |  |
| 72                                                                                                                                                                                        | 14.6 | 13.5     | 11.9                                                                                      | 11.5    | 9.3                                                                                       | 9.1     | 18.1                                                                                         | 16.6    | 14.1    | 13.0    | 72         |  |                                                                                     |  |
| 80                                                                                                                                                                                        | 13.0 | 12.2     | 10.9                                                                                      | 10.5    | 8.7                                                                                       | 8.3     | 17.0                                                                                         | 15.7    | 13.3    | 12.3    | 80         |  |                                                                                     |  |
| 88                                                                                                                                                                                        | 11.8 | 11.1     | 10.1                                                                                      | 9.6     | 8.1                                                                                       | 7.8     | 16.0                                                                                         | 14.8    | 12.5    | 11.7    | 88         |  |                                                                                     |  |
| 96                                                                                                                                                                                        | 10.8 | 10.2     | 9.3                                                                                       | 9.0     | 7.7                                                                                       | 7.4     | 15.1                                                                                         | 13.9    | 11.7    | 11.0    | 96         |  |                                                                                     |  |
| 104                                                                                                                                                                                       | 10.0 | 9.4      | 8.7                                                                                       | 8.4     | -                                                                                         | -       | 13.6                                                                                         | 13.3    | 11.1    | 10.4    | 104        |  |                                                                                     |  |
| 112                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 11.6                                                                                         | 11.6    | 10.6    | 10.1    | 112        |  |                                                                                     |  |
| 120                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 9.9                                                                                          | 9.8     | 10.1    | 9.6     | 120        |  |                                                                                     |  |
| 128                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 8.9                                                                                          | 8.9     | 9.5     | 9.1     | 128        |  |                                                                                     |  |
| 136                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 7.8                                                                                          | 7.8     | 8.2     | 8.2     | 136        |  |                                                                                     |  |
| 144                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 6.9                                                                                          | 6.9     | 7.3     | 7.5     | 144        |  |                                                                                     |  |
| 152                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 6.2                                                                                          | 6.2     | 6.5     | 6.5     | 152        |  |                                                                                     |  |
| 160                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 5.6                                                                                          | 5.6     | 5.8     | 5.8     | 160        |  |                                                                                     |  |
| 168                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 5.0                                                                                          | 5.0     | 5.1     | 5.1     | 168        |  |                                                                                     |  |
| 176                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 4.3                                                                                          | 4.3     | 4.7     | 4.7     | 176        |  |                                                                                     |  |
| 184                                                                                                                                                                                       | -    | -        | -                                                                                         | -       | -                                                                                         | -       | 3.6                                                                                          | 3.6     | -       | -       | 184        |  |                                                                                     |  |

|   |           |  181.1 ft |         |          |         |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|----------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1°  | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°     | 0°       | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |         |          |         |                                                                                                |         |         |         | ft                                                                                    |     |
| 64                                                                                                                                                                      | 14.4 11.2 | - -                                                                                          | - -     | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 14.1 11.2 | - -                                                                                          | - -     | 11.7 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 13.8 11.2 | - -                                                                                          | - -     | 11.4 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 13.5 11.2 | 11.5 10.6                                                                                    | - -     | 11.2 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 12.8 11.2 | 11.0 10.2                                                                                    | - -     | 10.9 8.8 | 10.3 -  | - -                                                                                            | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 11.3 11.1 | 10.4 9.8                                                                                     | 8.2 -   | 10.2 8.8 | 9.6 8.8 | - -                                                                                            | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | 9.4 9.4   | 9.9 9.5                                                                                      | 7.9 7.5 | 8.5 8.5  | 9.0 8.8 | 7.7 7.3                                                                                        | - -     | - -     | - -     | 112                                                                                   | 112 |
| 120                                                                                                                                                                     | 7.9 7.8   | 9.4 9.1                                                                                      | 7.7 7.2 | 7.0 7.0  | 8.3 8.3 | 7.7 7.1                                                                                        | - -     | - -     | - -     | 120                                                                                   | 120 |
| 128                                                                                                                                                                     | 6.9 6.9   | 8.5 8.4                                                                                      | 7.5 7.1 | 5.6 5.6  | 7.6 7.6 | 7.3 6.9                                                                                        | - -     | - -     | - -     | 128                                                                                   | 128 |
| 136                                                                                                                                                                     | 6.0 6.0   | 7.1 7.1                                                                                      | 7.3 6.9 | 4.4 4.4  | 6.5 6.5 | 6.9 6.7                                                                                        | - -     | - -     | - -     | 136                                                                                   | 136 |
| 144                                                                                                                                                                     | 4.9 4.9   | 5.8 5.8                                                                                      | 7.1 6.8 | 3.4 3.4  | 5.1 5.1 | 6.4 6.2                                                                                        | - -     | - -     | - -     | 144                                                                                   | 144 |
| 152                                                                                                                                                                     | 3.9 3.9   | 5.2 5.2                                                                                      | 6.0 6.0 | - -      | 4.3 4.3 | 5.6 5.6                                                                                        | - -     | - -     | - -     | 152                                                                                   | 152 |
| 160                                                                                                                                                                     | 3.1 3.1   | 4.4 4.4                                                                                      | 5.0 5.0 | - -      | 3.3 3.3 | 4.6 4.6                                                                                        | - -     | - -     | - -     | 160                                                                                   | 160 |
| 168                                                                                                                                                                     | - -       | 3.5 3.5                                                                                      | 4.1 4.1 | - -      | - -     | 3.7 3.7                                                                                        | - -     | - -     | - -     | 168                                                                                   | 168 |
| 176                                                                                                                                                                     | - -       | 2.6 2.6                                                                                      | 3.4 3.4 | - -      | - -     | 2.6 2.6                                                                                        | - -     | - -     | - -     | 176                                                                                   | 176 |



# HAV

|  33,100 lb +  33,100 lb |       |  16.4 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-------------------------------------------------------------------------------------|
|                         |       |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |                                                                                     |
|                                                                                                                                                                                           |       | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |      |                                                                                     |
|                                                                                                                                                                                           |       | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°  |  |
| ft                                                                                                                                                                                        |       |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft   |                                                                                     |
| 10                                                                                                                                                                                        | 119.2 | 111.6                                                                                     | 89.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 10                                                                                  |
| 12                                                                                                                                                                                        | 113.1 | 106.0                                                                                     | 86.0 | 82.2                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                                        | 107.3 | 101.1                                                                                     | 83.0 | 79.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                                        | 102.0 | 96.4                                                                                      | 80.3 | 77.0                                                                                      | 67.3 | 64.9                                                                                         | -    | -    | -    | -          | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                                        | 97.4  | 92.4                                                                                      | 77.9 | 74.8                                                                                      | 65.7 | 63.6                                                                                         | -    | -    | -    | -          | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                                        | 93.1  | 88.6                                                                                      | 75.5 | 72.7                                                                                      | 64.1 | 62.4                                                                                         | -    | -    | -    | -          | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                                        | 85.9  | 82.2                                                                                      | 71.6 | 69.3                                                                                      | 60.5 | 59.4                                                                                         | -    | -    | -    | -          | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        | 79.8  | 76.7                                                                                      | 67.8 | 65.9                                                                                      | 57.5 | 56.6                                                                                         | 75.2 | 67.3 | -    | -          | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        | 74.6  | 71.9                                                                                      | 63.6 | 62.4                                                                                      | 54.9 | 54.2                                                                                         | 67.1 | 60.7 | 62.9 | -          | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        | 67.3  | 65.9                                                                                      | 59.7 | 58.8                                                                                      | 53.3 | 52.6                                                                                         | 58.9 | 53.7 | 58.2 | 55.4       | 51.1 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        | 59.3  | 59.3                                                                                      | 55.6 | 55.0                                                                                      | -    | -                                                                                            | 51.5 | 47.6 | 53.0 | 48.6       | 49.0 | 48.7 | 40                                                                                  |
| 48                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 41.8 | 39.1 | 41.7 | 38.7       | 42.6 | 40.1 | 48                                                                                  |
| 56                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 32.7 | 31.8 | 32.8 | 32.7       | 33.4 | 32.3 | 56                                                                                  |
| 64                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 25.9 | 25.9 | 26.5 | 26.4       | 27.0 | 27.0 | 64                                                                                  |
| 72                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 22.1 | 22.1 | 22.5 | 22.3       | 22.3 | 22.3 | 72                                                                                  |
| 80                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 18.0 | 18.0 | 18.6 | 18.6       | 19.1 | 19.1 | 80                                                                                  |
| 88                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.3 | 15.3 | 15.5 | 15.5       | 15.8 | 15.8 | 88                                                                                  |
| 96                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.9 | 12.9 | 13.3 | 13.3       | 13.5 | 13.5 | 96                                                                                  |
| 104                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.6 | 10.6 | 11.1 | 11.1       | 11.1 | 11.1 | 104                                                                                 |
| 112                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.9  | 8.9  | 9.2  | 9.2        | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.4  | 7.4  | 7.6  | 7.6        | -    | -    | 120                                                                                 |
| 128                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.2  | 6.2  | -    | -          | -    | -    | 128                                                                                 |

|                                                                                     |                                                                                     |         |  181.1 ft |         |      |         |          |         |  196.9 ft |         |      |         |      |         |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|---------|------|---------|----------|---------|------------------------------------------------------------------------------------------------|---------|------|---------|------|---------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3° 1° |                                                                                              | 0,3° 1° |      | 0,3° 1° |          | 0,3° 1° |                                                                                                | 0,3° 1° |      | 0,3° 1° |      | 0,3° 1° |     |  |  |
|                                                                                     |                                                                                     | 0°      |                                                                                              | 18°     |      | 36°     |          | 0°      |                                                                                                | 18°     |      | 36°     |      |         |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |         |                                                                                              |         |      |         | 1,000 lb |         |                                                                                                |         |      |         |      |         | ft  |                                                                                       |  |
| 48                                                                                  |                                                                                     | 34.4    | 28.7                                                                                         | -       | -    | -       | -        | 26.6    | -                                                                                              | -       | -    | -       | -    | -       | 48  |                                                                                       |  |
| 56                                                                                  |                                                                                     | 27.9    | 26.3                                                                                         | 29.1    | 26.8 | 29.3    | 24.2     | 25.0    | 22.5                                                                                           | 25.1    | -    | -       | -    | -       | 56  |                                                                                       |  |
| 64                                                                                  |                                                                                     | 23.4    | 21.5                                                                                         | 23.5    | 22.5 | 24.5    | 23.4     | 21.4    | 20.3                                                                                           | 22.2    | 21.1 | 22.1    | 21.4 | -       | 64  |                                                                                       |  |
| 72                                                                                  |                                                                                     | 19.3    | 18.6                                                                                         | 19.1    | 18.8 | 19.9    | 19.3     | 17.3    | 16.8                                                                                           | 18.2    | 17.7 | 19.0    | 18.6 | -       | 72  |                                                                                       |  |
| 80                                                                                  |                                                                                     | 15.5    | 15.4                                                                                         | 16.4    | 16.2 | 16.7    | 16.5     | 13.9    | 13.9                                                                                           | 14.7    | 14.6 | 15.6    | 15.2 | -       | 80  |                                                                                       |  |
| 88                                                                                  |                                                                                     | 12.3    | 12.3                                                                                         | 13.1    | 13.1 | 13.6    | 13.6     | 11.0    | 11.0                                                                                           | 11.9    | 11.9 | 12.5    | 12.5 | -       | 88  |                                                                                       |  |
| 96                                                                                  |                                                                                     | 9.8     | 9.8                                                                                          | 10.4    | 10.4 | 10.9    | 10.9     | 8.6     | 8.6                                                                                            | 9.3     | 9.3  | 9.9     | 9.9  | -       | 96  |                                                                                       |  |
| 104                                                                                 |                                                                                     | 7.7     | 7.7                                                                                          | 8.2     | 8.2  | 8.6     | 8.6      | 6.6     | 6.6                                                                                            | 7.1     | 7.1  | 7.5     | 7.5  | -       | 104 |                                                                                       |  |
| 112                                                                                 |                                                                                     | 5.9     | 5.9                                                                                          | 6.3     | 6.3  | 6.7     | 6.7      | 4.8     | 4.8                                                                                            | 5.4     | 5.4  | 5.6     | 5.6  | -       | 112 |                                                                                       |  |
| 120                                                                                 |                                                                                     | 4.3     | 4.3                                                                                          | 4.8     | 4.8  | 5.0     | 5.0      | 3.2     | 3.2                                                                                            | 3.8     | 3.8  | 4.1     | 4.1  | -       | 120 |                                                                                       |  |
| 128                                                                                 |                                                                                     | 3.1     | 3.1                                                                                          | 3.4     | 3.4  | 3.6     | 3.6      | -       | -                                                                                              | -       | -    | -       | -    | -       | 128 |                                                                                       |  |



# HAV

|  33,100 lb +  33,100 lb |      |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |     |
|                                                                                                                                                                                           |      | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |                                                                                     |     |
|                                                                                                                                                                                           |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°                                                                                 |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        | 77.9 | 69.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 10  |
| 12                                                                                                                                                                                        | 73.4 | 66.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 12  |
| 14                                                                                                                                                                                        | 69.3 | 62.9                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 14  |
| 16                                                                                                                                                                                        | 65.6 | 59.9                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 16  |
| 18                                                                                                                                                                                        | 62.2 | 57.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 18  |
| 20                                                                                                                                                                                        | 59.1 | 54.5                                                                                      | 44.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 20  |
| 24                                                                                                                                                                                        | 53.6 | 50.1                                                                                      | 41.9 | 39.7                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 24  |
| 28                                                                                                                                                                                        | 49.2 | 46.2                                                                                      | 39.3 | 37.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 28  |
| 32                                                                                                                                                                                        | 45.3 | 42.9                                                                                      | 36.9 | 35.3                                                                                      | 29.0 | 27.8                                                                                         | 51.0 | 45.2 | -    | -          | -    | -                                                                                   | 32  |
| 36                                                                                                                                                                                        | 42.1 | 40.1                                                                                      | 34.9 | 33.3                                                                                      | 27.5 | 26.4                                                                                         | 49.3 | 44.1 | -    | -          | -    | -                                                                                   | 36  |
| 40                                                                                                                                                                                        | 39.1 | 37.4                                                                                      | 33.0 | 31.5                                                                                      | 26.0 | 24.9                                                                                         | 47.3 | 42.7 | 37.4 | -          | -    | -                                                                                   | 40  |
| 48                                                                                                                                                                                        | 34.7 | 33.2                                                                                      | 29.1 | 28.1                                                                                      | 23.5 | 22.7                                                                                         | 39.7 | 36.9 | 34.3 | 33.2       | -    | -                                                                                   | 48  |
| 56                                                                                                                                                                                        | 30.8 | 29.6                                                                                      | 26.2 | 25.4                                                                                      | 22.0 | 21.4                                                                                         | 32.0 | 30.2 | 31.6 | 30.9       | 25.1 | 24.4                                                                                | 56  |
| 64                                                                                                                                                                                        | 27.2 | 26.2                                                                                      | 24.1 | 23.5                                                                                      | -    | -                                                                                            | 26.3 | 25.9 | 27.3 | 26.8       | 23.8 | 23.4                                                                                | 64  |
| 72                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 21.5 | 21.5 | 22.6 | 22.6       | 22.5 | 22.5                                                                                | 72  |
| 80                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 18.2 | 18.2 | 18.8 | 18.8       | 19.0 | 19.0                                                                                | 80  |
| 88                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.8 | 15.8 | 16.2 | 15.5       | 16.3 | 16.3                                                                                | 88  |
| 96                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.1 | 13.1 | 13.4 | 13.4       | 13.9 | 13.9                                                                                | 96  |
| 104                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.4 | 11.4 | 11.7 | 11.7       | 12.2 | 12.2                                                                                | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.6  | 9.6  | 9.9  | 9.9        | 10.3 | 10.3                                                                                | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.1  | 8.1  | 8.7  | 8.7        | 8.8  | 8.8                                                                                 | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.7  | 6.7  | 7.2  | 7.2        | 4.5  | 4.5                                                                                 | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.5  | 5.5  | 6.0  | 6.0        | -    | -                                                                                   | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.7  | 4.7  | 4.9  | 4.9        | -    | -                                                                                   | 144 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 25.1                                                                                         | 21.4 | -    | -    | -    | -    | 20.6                                                                                           | 17.0 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 22.3                                                                                         | 20.6 | -    | -    | -    | -    | 19.8                                                                                           | 17.0 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 18.4                                                                                         | 17.5 | 19.9 | 19.2 | -    | -    | 17.3                                                                                           | 16.5 | 17.9 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 15.6                                                                                         | 15.4 | 16.6 | 16.1 | 17.3 | 17.3 | 13.9                                                                                           | 13.7 | 15.8 | 15.5 | 15.7 | 15.7 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 12.5                                                                                         | 12.5 | 14.0 | 13.8 | 15.0 | 14.7 | 11.0                                                                                           | 11.0 | 12.7 | 12.7 | 14.0 | 14.0 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 10.1                                                                                         | 10.1 | 11.5 | 11.5 | 12.6 | 12.6 | 8.6                                                                                            | 8.6  | 10.1 | 10.1 | 11.5 | 11.5 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 8.2                                                                                          | 8.2  | 9.5  | 9.5  | 10.4 | 10.4 | 6.6                                                                                            | 6.6  | 8.0  | 8.0  | 9.3  | 9.3  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 6.5                                                                                          | 6.5  | 7.6  | 7.6  | 8.5  | 8.5  | 5.0                                                                                            | 5.0  | 6.3  | 6.3  | 7.4  | 7.4  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 5.0                                                                                          | 5.0  | 6.0  | 6.0  | 6.7  | 6.7  | 3.7                                                                                            | 3.7  | 4.8  | 4.8  | 5.8  | 5.8  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 3.7                                                                                          | 3.7  | 4.5  | 4.5  | 5.2  | 5.2  | -                                                                                              | -    | 3.5  | 3.5  | 4.3  | 4.3  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 2.5                                                                                          | 2.5  | 3.3  | 3.3  | 3.8  | 3.8  | -                                                                                              | -    | -    | -    | 2.9  | 2.9  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 2.7  | 2.7  | -                                                                                              | -    | -    | -    | -    | -    | 144                                                                                   |  |



# HAV

|  33,100 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |  |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |  |
| 14                                                                                                                                                                                        |                                                                                   | 49.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |  |
| 16                                                                                                                                                                                        |                                                                                   | 47.3                                                                                      | 41.7 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |  |
| 18                                                                                                                                                                                        |                                                                                   | 45.5                                                                                      | 40.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |  |
| 20                                                                                                                                                                                        |                                                                                   | 43.6                                                                                      | 39.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |  |
| 24                                                                                                                                                                                        |                                                                                   | 40.0                                                                                      | 36.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |  |
| 28                                                                                                                                                                                        |                                                                                   | 36.8                                                                                      | 33.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |  |
| 32                                                                                                                                                                                        |                                                                                   | 34.1                                                                                      | 31.5 | 26.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |  |
| 36                                                                                                                                                                                        |                                                                                   | 31.7                                                                                      | 29.5 | 24.8                                                                                      | 23.6 | -                                                                                            | -    | 33.9 | 28.3 | -          | -    | 36                                                                                  |  |
| 40                                                                                                                                                                                        |                                                                                   | 29.5                                                                                      | 27.5 | 23.4                                                                                      | 22.3 | -                                                                                            | -    | 32.9 | 27.7 | -          | -    | 40                                                                                  |  |
| 48                                                                                                                                                                                        |                                                                                   | 25.8                                                                                      | 24.4 | 21.0                                                                                      | 20.1 | 16.1                                                                                         | 15.5 | 30.8 | 26.3 | -          | -    | 48                                                                                  |  |
| 56                                                                                                                                                                                        |                                                                                   | 22.9                                                                                      | 21.7 | 18.9                                                                                      | 17.9 | 14.6                                                                                         | 14.1 | 28.9 | 25.0 | 22.1       | 20.7 | 56                                                                                  |  |
| 64                                                                                                                                                                                        |                                                                                   | 20.3                                                                                      | 19.2 | 16.9                                                                                      | 16.2 | 13.4                                                                                         | 13.0 | 26.0 | 23.6 | 20.8       | 19.5 | 64                                                                                  |  |
| 72                                                                                                                                                                                        |                                                                                   | 18.1                                                                                      | 17.2 | 15.5                                                                                      | 14.8 | 12.6                                                                                         | 12.1 | 21.9 | 20.6 | 19.6       | 18.3 | 72                                                                                  |  |
| 80                                                                                                                                                                                        |                                                                                   | 16.3                                                                                      | 15.7 | 14.2                                                                                      | 13.8 | -                                                                                            | -    | 18.4 | 18.1 | 18.3       | 17.3 | 80                                                                                  |  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.6 | 15.2 | 16.3       | 16.0 | 88                                                                                  |  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.3 | 13.1 | 14.1       | 14.1 | 96                                                                                  |  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.4 | 11.4 | 11.8       | 11.8 | 104                                                                                 |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.0 | 10.0 | 10.5       | 10.5 | 112                                                                                 |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.4  | 8.4  | 9.2        | 9.2  | 120                                                                                 |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.5  | 7.5  | 7.9        | 7.9  | 128                                                                                 |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.3  | 6.3  | 6.8        | 6.8  | 136                                                                                 |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.3  | 5.3  | 5.8        | 5.8  | 144                                                                                 |  |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.3  | 4.3  | 4.7        | 4.7  | 152                                                                                 |  |
| 160                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.6  | 3.6  | 3.9        | 3.9  | 160                                                                                 |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      |      |      | ft                                                                                    |  |
| 56                                                                                  |                                                                                     | 19.6                                                                                         | 15.7 | -    | -    | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 19.2                                                                                         | 15.7 | -    | -    | -    | -    | 15.8                                                                                           | 12.6 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 18.1                                                                                         | 15.7 | -    | -    | -    | -    | 15.4                                                                                           | 12.6 | -    | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 14.9                                                                                         | 14.5 | 15.5 | 15.3 | -    | -    | 13.6                                                                                           | 12.4 | 14.2 | -    | -    | -    | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 12.6                                                                                         | 12.6 | 14.0 | 14.0 | 12.8 | 12.0 | 10.9                                                                                           | 10.9 | 12.9 | 12.4 | -    | -    | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 10.4                                                                                         | 10.4 | 11.8 | 11.8 | 12.3 | 11.8 | 8.6                                                                                            | 8.6  | 11.0 | 11.0 | 11.2 | 11.2 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 8.4                                                                                          | 8.4  | 10.2 | 10.2 | 11.4 | 11.3 | 6.8                                                                                            | 6.8  | 8.9  | 8.9  | 10.6 | 10.6 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 6.7                                                                                          | 6.7  | 8.5  | 8.5  | 9.6  | 9.6  | 5.2                                                                                            | 5.2  | 7.0  | 7.0  | 8.7  | 8.7  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 5.3                                                                                          | 5.3  | 6.9  | 6.9  | 8.3  | 8.3  | 3.9                                                                                            | 3.9  | 5.6  | 5.6  | 7.1  | 7.1  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 4.2                                                                                          | 4.2  | 5.5  | 5.5  | 6.8  | 6.8  | 2.6                                                                                            | 2.6  | 4.3  | 4.3  | 5.6  | 5.6  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 3.1                                                                                          | 3.1  | 4.4  | 4.4  | 5.4  | 5.4  | -                                                                                              | -    | 3.1  | 3.1  | 4.4  | 4.4  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | 3.4  | 3.4  | 4.2  | 4.2  | -                                                                                              | -    | -    | -    | 3.1  | 3.1  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.2  | 3.2  | -                                                                                              | -    | -    | -    | -    | -    | 152                                                                                   |  |



# HAV

|  33,100 lb +  33,100 lb |      |  75.5 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360°    |      | ASME B30.5 |     |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|---------|------|------------|-----|-------------------------------------------------------------------------------------|--|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |         |      |            |     |  |  |
| 0,3° 1°                                                                                                                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                      |      | 0,3° 1° |      | 0,3° 1°    |     |                                                                                     |  |
| 0°                                                                                                                                                                                        |      | 18°                                                                                       |      | 36°                                                                                       |      | 0°                                                                                           |      | 18°     |      | 36°        |     |                                                                                     |  |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |         |      |            |     | ft                                                                                  |  |
| 18                                                                                                                                                                                        | 32.9 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -   | 18                                                                                  |  |
| 20                                                                                                                                                                                        | 32.1 | 26.6                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -   | 20                                                                                  |  |
| 24                                                                                                                                                                                        | 30.4 | 25.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -   | 24                                                                                  |  |
| 28                                                                                                                                                                                        | 28.7 | 24.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -   | 28                                                                                  |  |
| 32                                                                                                                                                                                        | 26.8 | 23.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -   | 32                                                                                  |  |
| 36                                                                                                                                                                                        | 25.2 | 21.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -   | 36                                                                                  |  |
| 40                                                                                                                                                                                        | 23.6 | 20.6                                                                                      | 19.0 | -                                                                                         | -    | -                                                                                            | 22.2 | 19.8    | -    | -          | -   | 40                                                                                  |  |
| 48                                                                                                                                                                                        | 20.9 | 18.5                                                                                      | 16.7 | 15.6                                                                                      | -    | -                                                                                            | 21.2 | 19.0    | -    | -          | -   | 48                                                                                  |  |
| 56                                                                                                                                                                                        | 18.5 | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -    | -                                                                                            | 20.3 | 18.2    | -    | -          | -   | 56                                                                                  |  |
| 64                                                                                                                                                                                        | 16.3 | 15.1                                                                                      | 13.3 | 12.6                                                                                      | 10.1 | 9.9                                                                                          | 19.2 | 17.4    | 15.0 | -          | -   | 64                                                                                  |  |
| 72                                                                                                                                                                                        | 14.6 | 13.5                                                                                      | 11.9 | 11.5                                                                                      | 9.3  | 9.1                                                                                          | 18.1 | 16.6    | 14.1 | 13.0       | -   | 72                                                                                  |  |
| 80                                                                                                                                                                                        | 13.0 | 12.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7  | 8.3                                                                                          | 16.8 | 15.7    | 13.3 | 12.3       | 9.6 | 80                                                                                  |  |
| 88                                                                                                                                                                                        | 11.8 | 11.1                                                                                      | 10.1 | 9.6                                                                                       | 8.1  | 7.8                                                                                          | 15.1 | 14.4    | 12.5 | 11.7       | 9.2 | 88                                                                                  |  |
| 96                                                                                                                                                                                        | 10.8 | 10.2                                                                                      | 9.3  | 9.0                                                                                       | 7.7  | 7.4                                                                                          | 12.9 | 12.8    | 11.7 | 11.0       | 8.8 | 96                                                                                  |  |
| 104                                                                                                                                                                                       | 10.0 | 9.4                                                                                       | 8.7  | 8.4                                                                                       | -    | -                                                                                            | 11.2 | 11.0    | 11.1 | 10.4       | 8.4 | 104                                                                                 |  |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.6  | 9.6     | 10.5 | 9.9        | 8.1 | 112                                                                                 |  |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.3  | 8.3     | 9.1  | 9.1        | 7.9 | 120                                                                                 |  |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.3  | 7.3     | 8.0  | 8.0        | 7.6 | 128                                                                                 |  |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.3  | 6.3     | 7.0  | 7.0        | 7.1 | 136                                                                                 |  |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.3  | 5.3     | 6.0  | 6.0        | 6.2 | 144                                                                                 |  |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.5  | 4.5     | 5.2  | 5.2        | 5.6 | 152                                                                                 |  |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.7  | 3.7     | 4.4  | 4.4        | 4.7 | 160                                                                                 |  |
| 168                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.0  | 3.0     | 3.6  | 3.6        | -   | 168                                                                                 |  |
| 176                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.3  | 2.3     | 2.8  | 2.8        | -   | 176                                                                                 |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |     |  196.9 ft |     |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |     | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |     |                                                                                                |     |      |     | ft   |     |                                                                                       |  |
| 64                                                                                  |                                                                                     | 14.4                                                                                         | 11.2 | -    | -    | -        | -   | -                                                                                              | -   | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 14.1                                                                                         | 11.2 | -    | -    | -        | -   | 11.7                                                                                           | 8.8 | -    | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 13.5                                                                                         | 11.2 | -    | -    | -        | -   | 11.4                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 11.5                                                                                         | 10.7 | 11.5 | 10.6 | -        | -   | 10.2                                                                                           | 8.8 | -    | -   | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 9.6                                                                                          | 9.6  | 11.0 | 10.2 | -        | -   | 7.9                                                                                            | 7.8 | 10.3 | -   | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 7.7                                                                                          | 7.7  | 9.7  | 9.6  | 8.2      | -   | 6.2                                                                                            | 6.2 | 8.8  | 8.6 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 6.1                                                                                          | 6.1  | 8.5  | 8.5  | 7.9      | 7.5 | 4.6                                                                                            | 4.6 | 7.2  | 7.2 | 7.7  | 7.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 4.8                                                                                          | 4.8  | 7.0  | 7.0  | 7.7      | 7.2 | 3.3                                                                                            | 3.3 | 5.6  | 5.6 | 7.5  | 7.0 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 3.5                                                                                          | 3.5  | 5.6  | 5.6  | 7.1      | 6.9 | -                                                                                              | -   | 4.3  | 4.3 | 6.3  | 6.3 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 2.6                                                                                          | 2.6  | 4.4  | 4.4  | 6.0      | 6.0 | -                                                                                              | -   | 3.1  | 3.1 | 4.9  | 4.9 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | 3.4  | 3.4  | 4.9      | 4.9 | -                                                                                              | -   | -    | -   | 3.8  | 3.8 | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.8      | 3.8 | -                                                                                              | -   | -    | -   | -    | -   | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 2.8      | 2.8 | -                                                                                              | -   | -    | -   | -    | -   | 160                                                                                   |  |



# HAV

|  11,000 lb +  33,100 lb |                                                                                   |       |  16.4 ft |      |  19.7 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-----|
|                                                                                                                                                                                           |                                                                                   |       |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |      |      |     |
|                                                                                                          |  | 0,3°  | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |     |
|                                                                                                                                                                                           |                                                                                   | 0°    |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            | 36°  |      |     |
| ft                                                                                                                                                                                        |                                                                                   |       |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft   |      |     |
| 10                                                                                                                                                                                        |                                                                                   | 119.2 | 111.6                                                                                     | 89.3 | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 10   |     |
| 12                                                                                                                                                                                        |                                                                                   | 113.1 | 106.0                                                                                     | 86.0 | 82.2                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | 12   |     |
| 14                                                                                                                                                                                        |                                                                                   | 107.3 | 101.1                                                                                     | 83.0 | 79.5                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | 14   |     |
| 16                                                                                                                                                                                        |                                                                                   | 102.0 | 96.4                                                                                      | 80.3 | 77.0                                                                                      | 67.3     | 64.9                                                                                         | -    | -    | -    | -          | -    | 16   |     |
| 18                                                                                                                                                                                        |                                                                                   | 97.4  | 92.4                                                                                      | 77.9 | 74.8                                                                                      | 65.7     | 63.6                                                                                         | -    | -    | -    | -          | -    | 18   |     |
| 20                                                                                                                                                                                        |                                                                                   | 93.1  | 88.6                                                                                      | 75.5 | 72.7                                                                                      | 64.1     | 62.4                                                                                         | -    | -    | -    | -          | -    | 20   |     |
| 24                                                                                                                                                                                        |                                                                                   | 85.9  | 82.2                                                                                      | 71.6 | 69.3                                                                                      | 60.5     | 59.4                                                                                         | -    | -    | -    | -          | -    | 24   |     |
| 28                                                                                                                                                                                        |                                                                                   | 79.8  | 76.7                                                                                      | 67.8 | 65.9                                                                                      | 57.5     | 56.6                                                                                         | 63.0 | 56.5 | -    | -          | -    | 28   |     |
| 32                                                                                                                                                                                        |                                                                                   | 68.5  | 67.8                                                                                      | 63.6 | 62.4                                                                                      | 54.9     | 54.2                                                                                         | 54.9 | 49.6 | 55.7 | 46.7       | -    | 32   |     |
| 36                                                                                                                                                                                        |                                                                                   | 56.9  | 56.9                                                                                      | 56.1 | 55.5                                                                                      | 52.2     | 51.9                                                                                         | 48.0 | 43.9 | 48.0 | 45.3       | 48.1 | 36   |     |
| 40                                                                                                                                                                                        |                                                                                   | 46.8  | 46.8                                                                                      | 47.8 | 47.8                                                                                      | -        | -                                                                                            | 41.3 | 39.2 | 43.0 | 39.4       | 42.8 | 40.9 | 40  |
| 48                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 33.0 | 32.0 | 33.2 | 32.1       | 34.4 | 32.5 | 48  |
| 56                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 26.5 | 26.0 | 26.9 | 26.8       | 27.4 | 26.9 | 56  |
| 64                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 21.1 | 21.1 | 21.6 | 21.6       | 22.1 | 22.1 | 64  |
| 72                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 16.6 | 16.6 | 17.3 | 17.3       | 17.7 | 17.7 | 72  |
| 80                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 13.2 | 13.2 | 13.9 | 13.9       | 14.3 | 14.3 | 80  |
| 88                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 10.6 | 10.6 | 11.1 | 11.1       | 11.3 | 11.3 | 88  |
| 96                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 8.5  | 8.5  | 8.8  | 8.8        | 9.0  | 9.0  | 96  |
| 104                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 6.6  | 6.6  | 7.0  | 7.0        | 7.1  | 7.1  | 104 |
| 112                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.2  | 5.2  | 5.4  | 5.4        | -    | -    | 112 |
| 120                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.9  | 3.9  | 4.2  | 4.2        | -    | -    | 120 |
| 128                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.0  | 3.0  | -    | -          | -    | -    | 128 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |          |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|----------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°       | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |          | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      | 1,000 lb |      |      |                                                                                                |      |      |      |      | ft   |                                                                                       |  |
| 48                                                                                  |                                                                                     | 26.8                                                                                         | 24.8 | -    | -        | -    | -    | 24.2                                                                                           | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 20.9                                                                                         | 19.8 | 22.1 | 20.9     | 23.1 | 21.9 | 18.6                                                                                           | 17.7 | 19.8 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 16.3                                                                                         | 15.8 | 17.4 | 16.9     | 18.1 | 17.6 | 14.3                                                                                           | 13.9 | 15.4 | 15.0 | 16.3 | 15.8 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 12.6                                                                                         | 12.6 | 13.5 | 13.5     | 14.4 | 14.2 | 10.9                                                                                           | 10.9 | 11.8 | 11.8 | 12.6 | 12.6 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 9.7                                                                                          | 9.7  | 10.6 | 10.6     | 11.3 | 11.3 | 8.0                                                                                            | 8.0  | 8.9  | 8.9  | 9.5  | 9.5  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 7.2                                                                                          | 7.2  | 8.1  | 8.1      | 8.7  | 8.7  | 5.7                                                                                            | 5.7  | 6.6  | 6.6  | 7.1  | 7.1  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 5.3                                                                                          | 5.3  | 5.9  | 5.9      | 6.4  | 6.4  | 3.8                                                                                            | 3.8  | 4.5  | 4.5  | 5.0  | 5.0  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 3.7                                                                                          | 3.7  | 4.2  | 4.2      | 4.6  | 4.6  | -                                                                                              | -    | 2.8  | 2.8  | 3.3  | 3.3  | 104                                                                                   |  |

# HAV

|  11,000 lb +  33,100 lb |                                                                                   |          |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |
|                                                                                                          |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                           |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 77.9     | 69.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 73.4     | 66.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 69.3     | 62.9                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 65.6     | 59.9                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 62.2     | 57.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 59.1     | 54.5                                                                                      | 44.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 53.6     | 50.1                                                                                      | 41.9 | 39.7                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 49.2     | 46.2                                                                                      | 39.3 | 37.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 45.3     | 42.9                                                                                      | 36.9 | 35.3                                                                                      | 29.0 | 27.8                                                                                         | 50.4 | 44.7 | -    | -          | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1     | 40.1                                                                                      | 34.9 | 33.3                                                                                      | 27.5 | 26.4                                                                                         | 45.1 | 40.8 | -    | -          | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 39.1     | 37.4                                                                                      | 33.0 | 31.5                                                                                      | 26.0 | 24.9                                                                                         | 40.7 | 36.9 | 37.4 | -          | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 34.6     | 33.2                                                                                      | 29.1 | 28.1                                                                                      | 23.5 | 22.7                                                                                         | 31.7 | 30.4 | 33.0 | 31.7       | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 29.1     | 28.6                                                                                      | 26.2 | 25.4                                                                                      | 22.0 | 21.4                                                                                         | 26.3 | 25.2 | 27.5 | 25.9       | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 23.1     | 23.1                                                                                      | 23.3 | 23.1                                                                                      | -    | -                                                                                            | 21.5 | 21.2 | 22.4 | 21.5       | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 17.5 | 17.5 | 18.0 | 17.9       | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.1 | 14.1 | 15.2 | 15.2       | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.5 | 11.5 | 12.5 | 12.5       | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.2  | 9.2  | 10.1 | 10.1       | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.5  | 7.5  | 8.2  | 8.2        | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.9  | 5.9  | 6.5  | 6.5        | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.6  | 4.6  | 5.2  | 5.2        | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.5  | 3.5  | 4.0  | 4.0        | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.6  | 2.6  | 3.0  | 3.0        | 136                                                                                 |

|  |  |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |     |      |      |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|------|---------------------------------------------------------------------------------------|
|                                                                                     |                                                                                     | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°   |                                                                                       |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |     | 36°  |      |                                                                                       |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |     | ft   |      |                                                                                       |
| 48                                                                                  |                                                                                     | 23.5                                                                                         | -    | -    | -    | -    | -    | -                                                                                              | -    | -    | -   | -    | 48   |                                                                                       |
| 56                                                                                  |                                                                                     | 20.8                                                                                         | 19.1 | -    | -    | -    | -    | 18.7                                                                                           | 16.4 | -    | -   | -    | 56   |                                                                                       |
| 64                                                                                  |                                                                                     | 16.5                                                                                         | 15.7 | 18.5 | -    | -    | -    | 14.5                                                                                           | 13.9 | -    | -   | -    | 64   |                                                                                       |
| 72                                                                                  |                                                                                     | 12.6                                                                                         | 12.6 | 14.6 | 14.4 | 16.6 | -    | 10.9                                                                                           | 10.9 | 13.1 | -   | -    | 72   |                                                                                       |
| 80                                                                                  |                                                                                     | 9.7                                                                                          | 9.7  | 11.5 | 11.5 | 13.2 | 13.0 | 8.0                                                                                            | 8.0  | 9.9  | 9.9 | 11.7 | 11.5 | 80                                                                                    |
| 88                                                                                  |                                                                                     | 7.3                                                                                          | 7.3  | 8.9  | 8.9  | 10.4 | 10.4 | 5.7                                                                                            | 5.7  | 7.4  | 7.4 | 8.9  | 8.9  | 88                                                                                    |
| 96                                                                                  |                                                                                     | 5.4                                                                                          | 5.4  | 6.7  | 6.7  | 8.1  | 8.1  | 3.8                                                                                            | 3.8  | 5.4  | 5.4 | 6.7  | 6.7  | 96                                                                                    |
| 104                                                                                 |                                                                                     | 3.7                                                                                          | 3.7  | 5.0  | 5.0  | 6.2  | 6.2  | -                                                                                              | -    | 3.5  | 3.5 | 4.9  | 4.9  | 104                                                                                   |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5  | 4.6  | 4.6  | -                                                                                              | -    | -    | -   | 3.2  | 3.2  | 112                                                                                   |
| 120                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.2  | 3.2  | -                                                                                              | -    | -    | -   | -    | -    | 120                                                                                   |





# HAV

|  11,000 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 49.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 47.3                                                                                      | 41.7 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 45.5                                                                                      | 40.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 43.6                                                                                      | 39.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 40.0                                                                                      | 36.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 36.8                                                                                      | 33.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 34.1                                                                                      | 31.5 | 26.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 31.7                                                                                      | 29.5 | 24.8                                                                                      | 23.6 | -                                                                                            | -    | 33.9 | 28.3 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 29.5                                                                                      | 27.5 | 23.4                                                                                      | 22.3 | -                                                                                            | -    | 32.9 | 27.7 | -          | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 25.8                                                                                      | 24.4 | 21.0                                                                                      | 20.1 | 16.1                                                                                         | 15.5 | 29.9 | 25.9 | -          | -    | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 22.9                                                                                      | 21.7 | 18.9                                                                                      | 17.9 | 14.6                                                                                         | 14.1 | 25.7 | 23.2 | 22.1       | 20.7 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 20.3                                                                                      | 19.2 | 16.9                                                                                      | 16.2 | 13.4                                                                                         | 13.0 | 21.1 | 20.2 | 20.8       | 19.5 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | 18.1                                                                                      | 17.2 | 15.5                                                                                      | 14.8 | 12.6                                                                                         | 12.1 | 17.1 | 17.0 | 18.8       | 18.1 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | 16.3                                                                                      | 15.7 | 14.2                                                                                      | 13.8 | -                                                                                            | -    | 14.7 | 14.6 | 15.7       | 15.7 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.4 | 12.4 | 13.0       | 13.0 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.1 | 10.1 | 11.3       | 11.3 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.2  | 8.2  | 9.5        | 9.5  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.8  | 6.8  | 7.8        | 7.8  | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.4  | 5.4  | 6.3        | 6.3  | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.2  | 4.2  | 5.1        | 5.1  | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.3  | 3.3  | 4.0        | 4.0  | 136                                                                                 |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 2.5  | 2.5  | 3.1        | 3.1  | 144                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |          |      |      |      |      |  196.9 ft |      |      |     |      |     |                                                                                       |    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|-----|---------------------------------------------------------------------------------------|----|
|  |  | 0,3°                                                                                         | 1°       | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°  |  |    |
|                                                                                     |                                                                                     | 0°                                                                                           |          | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |     | 36°  |     |                                                                                       |    |
| ft                                                                                  |                                                                                     |                                                                                              | 1,000 lb |      |      |      |      |                                                                                                |      |      |     |      |     |                                                                                       | ft |
| 56                                                                                  |                                                                                     | 18.9                                                                                         | 15.7     | -    | -    | -    | -    | -                                                                                              | -    | -    | -   | -    | -   | 56                                                                                    |    |
| 64                                                                                  |                                                                                     | 15.8                                                                                         | 14.9     | -    | -    | -    | -    | 13.9                                                                                           | 12.6 | -    | -   | -    | -   | 64                                                                                    |    |
| 72                                                                                  |                                                                                     | 12.4                                                                                         | 12.4     | -    | -    | -    | -    | 10.7                                                                                           | 10.6 | -    | -   | -    | -   | 72                                                                                    |    |
| 80                                                                                  |                                                                                     | 9.5                                                                                          | 9.5      | 12.4 | 12.4 | -    | -    | 7.8                                                                                            | 7.8  | 10.8 | -   | -    | -   | 80                                                                                    |    |
| 88                                                                                  |                                                                                     | 7.3                                                                                          | 7.3      | 9.8  | 9.8  | 11.6 | 11.6 | 5.7                                                                                            | 5.7  | 8.2  | 8.2 | -    | -   | 88                                                                                    |    |
| 96                                                                                  |                                                                                     | 5.4                                                                                          | 5.4      | 7.6  | 7.6  | 9.7  | 9.7  | 3.8                                                                                            | 3.8  | 6.1  | 6.1 | 8.4  | 8.4 | 96                                                                                    |    |
| 104                                                                                 |                                                                                     | 3.9                                                                                          | 3.9      | 5.7  | 5.7  | 7.7  | 7.7  | -                                                                                              | -    | 4.4  | 4.4 | 6.4  | 6.4 | 104                                                                                   |    |
| 112                                                                                 |                                                                                     | -                                                                                            | -        | 4.3  | 4.3  | 5.9  | 5.9  | -                                                                                              | -    | -    | -   | 4.8  | 4.8 | 112                                                                                   |    |
| 120                                                                                 |                                                                                     | -                                                                                            | -        | 3.1  | 3.1  | 4.5  | 4.5  | -                                                                                              | -    | -    | -   | 3.4  | 3.4 | 120                                                                                   |    |
| 128                                                                                 |                                                                                     | -                                                                                            | -        | -    | -    | 3.3  | 3.3  | -                                                                                              | -    | -    | -   | -    | -   | 128                                                                                   |    |



# HAV

|  11,000 lb +  33,100 lb |  |      |  75.5 ft |      |      |  19.7 ft |     |      |  32.2 ft/s  |      |      | 360° |     | ASME B30.5                                                                          |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------|-------------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------------|-----|------|----------------------------------------------------------------------------------------------|------|------|------|-----|-------------------------------------------------------------------------------------|-----|--|
|                         |  |      |  42.3 ft |      |      |                                                                                           |     |      |  126.0 ft |      |      |      |     |                                                                                     |     |  |
|                                                                                                                                                                                           |  | 0,3° | 1°                                                                                        | 0,3° | 1°   | 0,3°                                                                                      | 1°  | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°  |                                                                                     |     |  |
|                                                                                                                                                                                           |  | 0°   |                                                                                           | 18°  |      | 36°                                                                                       |     | 0°   |                                                                                              | 18°  |      | 36°  |     |  |     |  |
| ft                                                                                                                                                                                        |  |      |                                                                                           |      |      | 1,000 lb                                                                                  |     |      |                                                                                              |      |      |      |     | ft                                                                                  |     |  |
| 18                                                                                                                                                                                        |  | 32.9 | -                                                                                         | -    | -    | -                                                                                         | -   | -    | -                                                                                            | -    | -    | -    | -   | -                                                                                   | 18  |  |
| 20                                                                                                                                                                                        |  | 32.1 | 26.6                                                                                      | -    | -    | -                                                                                         | -   | -    | -                                                                                            | -    | -    | -    | -   | -                                                                                   | 20  |  |
| 24                                                                                                                                                                                        |  | 30.4 | 25.4                                                                                      | -    | -    | -                                                                                         | -   | -    | -                                                                                            | -    | -    | -    | -   | -                                                                                   | 24  |  |
| 28                                                                                                                                                                                        |  | 28.7 | 24.2                                                                                      | -    | -    | -                                                                                         | -   | -    | -                                                                                            | -    | -    | -    | -   | -                                                                                   | 28  |  |
| 32                                                                                                                                                                                        |  | 26.8 | 23.0                                                                                      | -    | -    | -                                                                                         | -   | -    | -                                                                                            | -    | -    | -    | -   | -                                                                                   | 32  |  |
| 36                                                                                                                                                                                        |  | 25.2 | 21.7                                                                                      | -    | -    | -                                                                                         | -   | -    | -                                                                                            | -    | -    | -    | -   | -                                                                                   | 36  |  |
| 40                                                                                                                                                                                        |  | 23.6 | 20.6                                                                                      | 19.0 | -    | -                                                                                         | -   | 22.2 | 19.8                                                                                         | -    | -    | -    | -   | -                                                                                   | 40  |  |
| 48                                                                                                                                                                                        |  | 20.9 | 18.5                                                                                      | 16.7 | 15.6 | -                                                                                         | -   | 21.2 | 19.0                                                                                         | -    | -    | -    | -   | -                                                                                   | 48  |  |
| 56                                                                                                                                                                                        |  | 18.5 | 16.7                                                                                      | 14.8 | 14.0 | -                                                                                         | -   | 20.3 | 18.2                                                                                         | -    | -    | -    | -   | -                                                                                   | 56  |  |
| 64                                                                                                                                                                                        |  | 16.3 | 15.1                                                                                      | 13.3 | 12.6 | 10.1                                                                                      | 9.9 | 18.7 | 17.1                                                                                         | 15.0 | -    | -    | -   | -                                                                                   | 64  |  |
| 72                                                                                                                                                                                        |  | 14.6 | 13.5                                                                                      | 11.9 | 11.5 | 9.3                                                                                       | 9.1 | 16.4 | 15.7                                                                                         | 14.1 | 13.0 | -    | -   | -                                                                                   | 72  |  |
| 80                                                                                                                                                                                        |  | 13.0 | 12.2                                                                                      | 10.9 | 10.5 | 8.7                                                                                       | 8.3 | 13.7 | 13.6                                                                                         | 13.3 | 12.3 | 9.6  | 9.2 | -                                                                                   | 80  |  |
| 88                                                                                                                                                                                        |  | 11.8 | 11.1                                                                                      | 10.1 | 9.6  | 8.1                                                                                       | 7.8 | 12.0 | 11.8                                                                                         | 12.3 | 11.5 | 9.2  | 8.7 | -                                                                                   | 88  |  |
| 96                                                                                                                                                                                        |  | 10.8 | 10.2                                                                                      | 9.3  | 9.0  | 7.7                                                                                       | 7.4 | 9.8  | 9.8                                                                                          | 11.1 | 10.8 | 8.8  | 8.3 | -                                                                                   | 96  |  |
| 104                                                                                                                                                                                       |  | 10.0 | 9.4                                                                                       | 8.7  | 8.4  | -                                                                                         | -   | 8.1  | 8.1                                                                                          | 9.6  | 9.6  | 8.4  | 8.0 | -                                                                                   | 104 |  |
| 112                                                                                                                                                                                       |  | -    | -                                                                                         | -    | -    | -                                                                                         | -   | 6.8  | 6.8                                                                                          | 8.5  | 8.5  | 8.1  | 7.7 | -                                                                                   | 112 |  |
| 120                                                                                                                                                                                       |  | -    | -                                                                                         | -    | -    | -                                                                                         | -   | 5.6  | 5.6                                                                                          | 7.0  | 7.0  | 7.6  | 7.4 | -                                                                                   | 120 |  |
| 128                                                                                                                                                                                       |  | -    | -                                                                                         | -    | -    | -                                                                                         | -   | 4.4  | 4.4                                                                                          | 5.7  | 5.7  | 6.7  | 6.7 | -                                                                                   | 128 |  |
| 136                                                                                                                                                                                       |  | -    | -                                                                                         | -    | -    | -                                                                                         | -   | 3.5  | 3.5                                                                                          | 4.5  | 4.5  | 5.4  | 5.4 | -                                                                                   | 136 |  |
| 144                                                                                                                                                                                       |  | -    | -                                                                                         | -    | -    | -                                                                                         | -   | 2.7  | 2.7                                                                                          | 3.6  | 3.6  | 4.2  | 4.2 | -                                                                                   | 144 |  |
| 152                                                                                                                                                                                       |  | -    | -                                                                                         | -    | -    | -                                                                                         | -   | -    | -                                                                                            | -    | -    | 3.2  | 3.2 | -                                                                                   | 152 |  |

|   |      |  181.1 ft |     |     |     |          |   |  196.9 ft |     |      |   |     |     |  |      |  |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|-----|-----|-----|----------|---|------------------------------------------------------------------------------------------------|-----|------|---|-----|-----|---------------------------------------------------------------------------------------|------|--|----|--|
|                                                                                                                                                                         |      | 0,3°                                                                                         |     | 1°  |     | 0,3°     |   | 1°                                                                                             |     | 0,3° |   | 1°  |     |                                                                                       | 0,3° |  | 1° |  |
|                                                                                                                                                                         |      | 0°                                                                                           |     | 18° |     | 36°      |   | 0°                                                                                             |     | 18°  |   | 36° |     |                                                                                       |      |  |    |  |
| ft                                                                                                                                                                      |      |                                                                                              |     |     |     | 1,000 lb |   |                                                                                                |     |      |   |     |     | ft                                                                                    |      |  |    |  |
| 64                                                                                                                                                                      | 13.7 | 11.2                                                                                         | -   | -   | -   | -        | - | -                                                                                              | -   | -    | - | -   | -   | -                                                                                     | 64   |  |    |  |
| 72                                                                                                                                                                      | 11.5 | 10.8                                                                                         | -   | -   | -   | -        | - | 9.5                                                                                            | 8.8 | -    | - | -   | -   | -                                                                                     | 72   |  |    |  |
| 80                                                                                                                                                                      | 8.9  | 8.9                                                                                          | -   | -   | -   | -        | - | 6.9                                                                                            | 6.9 | -    | - | -   | -   | -                                                                                     | 80   |  |    |  |
| 88                                                                                                                                                                      | 6.6  | 6.6                                                                                          | 9.8 | 9.8 | -   | -        | - | 4.9                                                                                            | 4.9 | -    | - | -   | -   | -                                                                                     | 88   |  |    |  |
| 96                                                                                                                                                                      | 4.8  | 4.8                                                                                          | 7.6 | 7.6 | -   | -        | - | 3.1                                                                                            | 3.1 | 6.3  | - | -   | -   | -                                                                                     | 96   |  |    |  |
| 104                                                                                                                                                                     | 3.3  | 3.3                                                                                          | 5.9 | 5.9 | 8.2 | -        | - | -                                                                                              | -   | 4.4  | - | -   | -   | -                                                                                     | 104  |  |    |  |
| 112                                                                                                                                                                     | -    | -                                                                                            | 4.3 | 4.3 | 6.5 | 6.5      | - | -                                                                                              | -   | -    | - | -   | 5.4 | -                                                                                     | 112  |  |    |  |
| 120                                                                                                                                                                     | -    | -                                                                                            | 3.1 | 3.1 | 5.2 | 5.2      | - | -                                                                                              | -   | -    | - | -   | 4.1 | -                                                                                     | 120  |  |    |  |
| 128                                                                                                                                                                     | -    | -                                                                                            | -   | -   | 3.9 | 3.9      | - | -                                                                                              | -   | -    | - | -   | 2.7 | -                                                                                     | 128  |  |    |  |
| 136                                                                                                                                                                     | -    | -                                                                                            | -   | -   | 2.7 | 2.7      | - | -                                                                                              | -   | -    | - | -   | -   | -                                                                                     | 136  |  |    |  |

# HAV

|  0 lb + 33,100 lb |                                                                                   |          |  16.4 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |      |                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                    |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft  |      |      |      |            |      |      |                                                                                     |
|                   |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |  |
|                                                                                                    |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            | 36°  |      |                                                                                     |
| ft                                                                                                 |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft   |      |                                                                                     |
| 10                                                                                                 |                                                                                   | 119.2    | 111.6                                                                                     | 89.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 10                                                                                  |
| 12                                                                                                 |                                                                                   | 113.1    | 106.0                                                                                     | 86.0 | 82.2                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 12                                                                                  |
| 14                                                                                                 |                                                                                   | 107.3    | 101.1                                                                                     | 83.0 | 79.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 14                                                                                  |
| 16                                                                                                 |                                                                                   | 102.0    | 96.4                                                                                      | 80.3 | 77.0                                                                                      | 67.3 | 64.9                                                                                         | -    | -    | -    | -          | -    | -    | 16                                                                                  |
| 18                                                                                                 |                                                                                   | 97.4     | 92.4                                                                                      | 77.9 | 74.8                                                                                      | 65.7 | 63.6                                                                                         | -    | -    | -    | -          | -    | -    | 18                                                                                  |
| 20                                                                                                 |                                                                                   | 93.1     | 88.6                                                                                      | 75.5 | 72.7                                                                                      | 64.1 | 62.4                                                                                         | -    | -    | -    | -          | -    | -    | 20                                                                                  |
| 24                                                                                                 |                                                                                   | 85.9     | 82.2                                                                                      | 71.6 | 69.3                                                                                      | 60.5 | 59.4                                                                                         | -    | -    | -    | -          | -    | -    | 24                                                                                  |
| 28                                                                                                 |                                                                                   | 75.4     | 73.9                                                                                      | 67.8 | 65.9                                                                                      | 57.5 | 56.6                                                                                         | 56.9 | 50.9 | -    | -          | -    | -    | 28                                                                                  |
| 32                                                                                                 |                                                                                   | 60.3     | 60.3                                                                                      | 61.0 | 60.6                                                                                      | 54.9 | 54.2                                                                                         | 48.7 | 44.9 | 50.2 | 44.7       | -    | -    | 32                                                                                  |
| 36                                                                                                 |                                                                                   | 49.6     | 49.6                                                                                      | 51.2 | 51.2                                                                                      | 49.1 | 48.8                                                                                         | 42.6 | 39.8 | 43.1 | 40.4       | 44.3 | 38.8 | 36                                                                                  |
| 40                                                                                                 |                                                                                   | 40.5     | 40.5                                                                                      | 41.5 | 41.5                                                                                      | -    | -                                                                                            | 37.9 | 35.5 | 38.3 | 36.0       | 38.5 | 36.6 | 40                                                                                  |
| 48                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 29.9 | 27.9 | 30.5 | 29.0       | 30.5 | 29.6 | 48                                                                                  |
| 56                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 23.0 | 22.4 | 24.1 | 23.3       | 24.6 | 24.2 | 56                                                                                  |
| 64                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 17.5 | 17.5 | 18.4 | 18.4       | 19.1 | 19.1 | 64                                                                                  |
| 72                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.5 | 13.5 | 14.2 | 14.2       | 14.9 | 14.9 | 72                                                                                  |
| 80                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.6 | 10.6 | 11.1 | 11.1       | 11.5 | 11.5 | 80                                                                                  |
| 88                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.2  | 8.2  | 8.8  | 8.8        | 9.0  | 9.0  | 88                                                                                  |
| 96                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.3  | 6.3  | 6.7  | 6.7        | 7.0  | 7.0  | 96                                                                                  |
| 104                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.6  | 4.6  | 5.0  | 5.0        | 5.3  | 5.3  | 104                                                                                 |
| 112                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.5  | 3.5  | 3.7  | 3.7        | -    | -    | 112                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      |      |      | ft                                                                                    |  |
| 48                                                                                  |                                                                                     | 22.1                                                                                         | 20.6 | -    | -    | -    | -    | 19.7                                                                                           | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 16.7                                                                                         | 16.1 | 17.9 | 17.2 | 18.9 | 18.2 | 14.6                                                                                           | 14.2 | 15.9 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.7                                                                                         | 12.6 | 13.6 | 13.5 | 14.5 | 14.2 | 10.7                                                                                           | 10.6 | 11.8 | 11.7 | 12.7 | 12.6 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 9.3                                                                                          | 9.3  | 10.2 | 10.2 | 11.1 | 11.1 | 7.6                                                                                            | 7.6  | 8.7  | 8.7  | 9.3  | 9.3  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 6.9                                                                                          | 6.9  | 7.6  | 7.6  | 8.2  | 8.2  | 5.2                                                                                            | 5.2  | 6.0  | 6.0  | 6.7  | 6.7  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 4.7                                                                                          | 4.7  | 5.4  | 5.4  | 6.0  | 6.0  | -                                                                                              | -    | 3.8  | 3.8  | 4.4  | 4.4  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 2.9                                                                                          | 2.9  | 3.6  | 3.6  | 4.1  | 4.1  | -                                                                                              | -    | -    | -    | -    | -    | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 2.4  | 2.4  | -                                                                                              | -    | -    | -    | -    | -    | 104                                                                                   |  |



# HAV

|  0 lb +  33,100 lb |                                                                                   |      |  36.1 ft |      |  19.7 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-----|
|                                                                                                                                                                                      |                                                                                   |      |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |      |      |     |
|                                                                                                     |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |     |
|                                                                                                                                                                                      |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            | 36°  |      |     |
| ft                                                                                                                                                                                   |                                                                                   |      |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft   |      |     |
| 10                                                                                                                                                                                   |                                                                                   | 77.9 | 69.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 10  |
| 12                                                                                                                                                                                   |                                                                                   | 73.4 | 66.0                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 12  |
| 14                                                                                                                                                                                   |                                                                                   | 69.3 | 62.9                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 14  |
| 16                                                                                                                                                                                   |                                                                                   | 65.6 | 59.9                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 16  |
| 18                                                                                                                                                                                   |                                                                                   | 62.2 | 57.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 18  |
| 20                                                                                                                                                                                   |                                                                                   | 59.1 | 54.5                                                                                      | 44.9 | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 20  |
| 24                                                                                                                                                                                   |                                                                                   | 53.6 | 50.1                                                                                      | 41.9 | 39.7                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 24  |
| 28                                                                                                                                                                                   |                                                                                   | 49.2 | 46.2                                                                                      | 39.3 | 37.4                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 28  |
| 32                                                                                                                                                                                   |                                                                                   | 45.3 | 42.9                                                                                      | 36.9 | 35.3                                                                                      | 29.0     | 27.8                                                                                         | 46.6 | 39.7 | -    | -          | -    | -    | 32  |
| 36                                                                                                                                                                                   |                                                                                   | 42.1 | 40.1                                                                                      | 34.9 | 33.3                                                                                      | 27.5     | 26.4                                                                                         | 40.5 | 36.5 | -    | -          | -    | -    | 36  |
| 40                                                                                                                                                                                   |                                                                                   | 39.0 | 37.4                                                                                      | 33.0 | 31.5                                                                                      | 26.0     | 24.9                                                                                         | 36.1 | 33.8 | 36.8 | -          | -    | -    | 40  |
| 48                                                                                                                                                                                   |                                                                                   | 32.8 | 32.2                                                                                      | 29.1 | 28.1                                                                                      | 23.5     | 22.7                                                                                         | 28.8 | 27.4 | 29.7 | 27.5       | -    | -    | 48  |
| 56                                                                                                                                                                                   |                                                                                   | 25.1 | 25.1                                                                                      | 25.5 | 25.0                                                                                      | 22.0     | 21.4                                                                                         | 23.7 | 22.2 | 24.3 | 22.8       | 24.3 | 23.2 | 56  |
| 64                                                                                                                                                                                   |                                                                                   | 19.7 | 19.7                                                                                      | 20.5 | 20.5                                                                                      | -        | -                                                                                            | 18.6 | 18.2 | 19.4 | 19.4       | 20.4 | 19.8 | 64  |
| 72                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 14.6 | 14.6 | 16.0 | 16.0       | 17.0 | 16.8 | 72  |
| 80                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 11.5 | 11.5 | 12.8 | 12.8       | 13.9 | 13.9 | 80  |
| 88                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 9.0  | 9.0  | 10.2 | 10.2       | 11.1 | 11.1 | 88  |
| 96                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.1  | 7.1  | 8.1  | 8.1        | 8.8  | 8.8  | 96  |
| 104                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.5  | 5.5  | 6.2  | 6.2        | 6.8  | 6.8  | 104 |
| 112                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 4.1  | 4.1  | 4.8  | 4.8        | 5.2  | 5.2  | 112 |
| 120                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.1  | 3.1  | 3.5  | 3.5        | 3.9  | 3.9  | 120 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |     | ft   |     |                                                                                       |  |
| 48                                                                                  |                                                                                     | 21.9                                                                                         | -    | -    | -    | -        | -    | -                                                                                              | -    | -    | -   | -    | -   | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 16.9                                                                                         | 15.8 | -    | -    | -        | -    | 14.9                                                                                           | 13.9 | -    | -   | -    | -   | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.7                                                                                         | 12.3 | 15.1 | -    | -        | -    | 10.9                                                                                           | 10.6 | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 9.3                                                                                          | 9.3  | 11.3 | 11.3 | 13.3     | -    | 7.6                                                                                            | 7.6  | 9.8  | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 6.7                                                                                          | 6.7  | 8.7  | 8.7  | 10.2     | 10.2 | 5.0                                                                                            | 5.0  | 6.9  | 6.9 | 8.8  | 8.8 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 4.7                                                                                          | 4.7  | 6.3  | 6.3  | 7.8      | 7.8  | -                                                                                              | -    | 4.8  | 4.8 | 6.3  | 6.3 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 2.9                                                                                          | 2.9  | 4.5  | 4.5  | 5.6      | 5.6  | -                                                                                              | -    | 2.9  | 2.9 | 4.3  | 4.3 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | -                                                                                            | -    | 2.8  | 2.8  | 3.9      | 3.9  | -                                                                                              | -    | -    | -   | 2.6  | 2.6 | 104                                                                                   |  |



# HAV

|  0 lb +  33,100 lb |                                                                                   |      |  55.8 ft |      |      |  19.7 ft |      |      |  32.2 ft/s |      |      | 360° |      | ASME B30.5                                                                          |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------------|------|------|----------------------------------------------------------------------------------------------|------|------|------|------|-------------------------------------------------------------------------------------|--|--|
|                                                                                                                                                                                      |                                                                                   |      |  42.3 ft |      |      |                                                                                           |      |      |  126.0 ft |      |      |      |      |                                                                                     |  |  |
|                                                                                                     |  | 0,3° | 1°                                                                                        | 0,3° | 1°   | 0,3°                                                                                      | 1°   | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°   |  |  |  |
|                                                                                                                                                                                      |                                                                                   | 0°   |                                                                                           | 18°  |      | 36°                                                                                       |      | 0°   |                                                                                              | 18°  |      | 36°  |      |                                                                                     |  |  |
| ft                                                                                                                                                                                   |                                                                                   |      |                                                                                           |      |      | 1,000 lb                                                                                  |      |      |                                                                                              |      |      |      |      | ft                                                                                  |  |  |
| 14                                                                                                                                                                                   |                                                                                   | 49.3 | -                                                                                         | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 14                                                                                  |  |  |
| 16                                                                                                                                                                                   |                                                                                   | 47.3 | 41.7                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 16                                                                                  |  |  |
| 18                                                                                                                                                                                   |                                                                                   | 45.5 | 40.4                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 18                                                                                  |  |  |
| 20                                                                                                                                                                                   |                                                                                   | 43.6 | 39.0                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 20                                                                                  |  |  |
| 24                                                                                                                                                                                   |                                                                                   | 40.0 | 36.3                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 24                                                                                  |  |  |
| 28                                                                                                                                                                                   |                                                                                   | 36.8 | 33.8                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 28                                                                                  |  |  |
| 32                                                                                                                                                                                   |                                                                                   | 34.1 | 31.5                                                                                      | 26.4 | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 32                                                                                  |  |  |
| 36                                                                                                                                                                                   |                                                                                   | 31.7 | 29.5                                                                                      | 24.8 | 23.6 | -                                                                                         | -    | 33.9 | 28.3                                                                                         | -    | -    | -    | -    | 36                                                                                  |  |  |
| 40                                                                                                                                                                                   |                                                                                   | 29.5 | 27.5                                                                                      | 23.4 | 22.3 | -                                                                                         | -    | 32.4 | 27.4                                                                                         | -    | -    | -    | -    | 40                                                                                  |  |  |
| 48                                                                                                                                                                                   |                                                                                   | 25.8 | 24.4                                                                                      | 21.0 | 20.1 | 16.1                                                                                      | 15.5 | 27.9 | 24.5                                                                                         | -    | -    | -    | -    | 48                                                                                  |  |  |
| 56                                                                                                                                                                                   |                                                                                   | 22.9 | 21.7                                                                                      | 18.9 | 17.9 | 14.6                                                                                      | 14.1 | 22.2 | 21.0                                                                                         | 21.9 | 20.4 | -    | -    | 56                                                                                  |  |  |
| 64                                                                                                                                                                                   |                                                                                   | 20.3 | 19.2                                                                                      | 16.9 | 16.2 | 13.4                                                                                      | 13.0 | 18.5 | 18.0                                                                                         | 19.4 | 18.8 | -    | -    | 64                                                                                  |  |  |
| 72                                                                                                                                                                                   |                                                                                   | 17.5 | 17.2                                                                                      | 15.5 | 14.8 | 12.6                                                                                      | 12.1 | 14.9 | 14.8                                                                                         | 16.2 | 15.9 | 14.3 | 13.7 | 72                                                                                  |  |  |
| 80                                                                                                                                                                                   |                                                                                   | 14.4 | 14.4                                                                                      | 14.2 | 13.8 | -                                                                                         | -    | 12.2 | 12.2                                                                                         | 13.9 | 13.9 | 13.6 | 13.1 | 80                                                                                  |  |  |
| 88                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | 9.9  | 9.9                                                                                          | 11.5 | 11.5 | 12.3 | 12.1 | 88                                                                                  |  |  |
| 96                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | 7.8  | 7.8                                                                                          | 9.4  | 9.4  | 10.6 | 10.6 | 96                                                                                  |  |  |
| 104                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | 6.3  | 6.3                                                                                          | 7.5  | 7.5  | 8.6  | 8.6  | 104                                                                                 |  |  |
| 112                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | 4.8  | 4.8                                                                                          | 6.1  | 6.1  | 7.0  | 7.0  | 112                                                                                 |  |  |
| 120                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | 3.7  | 3.7                                                                                          | 4.8  | 4.8  | 5.4  | 5.4  | 120                                                                                 |  |  |
| 128                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | 2.6  | 2.6                                                                                          | 3.5  | 3.5  | 4.2  | 4.2  | 128                                                                                 |  |  |
| 136                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | -    | -                                                                                            | 2.6  | 2.6  | 3.1  | 3.1  | 136                                                                                 |  |  |

|                                                                                        |                                                                                     |  181.1 ft |      |      |     |      |     |  196.9 ft |      |      |    |      |    |                                                                                       |  |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|------|-----|------------------------------------------------------------------------------------------------|------|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  ft |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1°   | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                        |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°  |     | 0°                                                                                             |      | 18°  |    | 36°  |    |                                                                                       |  |
| 1,000 lb                                                                               |                                                                                     |                                                                                              |      |      |     |      |     |                                                                                                |      |      |    |      |    | ft                                                                                    |  |
| 56                                                                                     |                                                                                     | 16.4                                                                                         | 14.7 | -    | -   | -    | -   | -                                                                                              | -    | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                     |                                                                                     | 12.5                                                                                         | 12.3 | -    | -   | -    | -   | 10.5                                                                                           | 10.4 | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                     |                                                                                     | 9.1                                                                                          | 9.1  | -    | -   | -    | -   | 7.3                                                                                            | 7.3  | -    | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                     |                                                                                     | 6.7                                                                                          | 6.7  | 9.3  | 9.3 | -    | -   | 5.0                                                                                            | 5.0  | 7.8  | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                     |                                                                                     | 4.7                                                                                          | 4.7  | 7.1  | 7.1 | 9.4  | 9.4 | 3.0                                                                                            | 3.0  | 5.7  | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                     |                                                                                     | 3.1                                                                                          | 3.1  | 5.2  | 5.2 | 7.3  | 7.3 | -                                                                                              | -    | 3.8  | -  | 5.9  | -  | 96                                                                                    |  |
| 104                                                                                    |                                                                                     | -                                                                                            | -    | 3.7  | 3.7 | 5.5  | 5.5 | -                                                                                              | -    | -    | -  | 4.2  | -  | 104                                                                                   |  |
| 112                                                                                    |                                                                                     | -                                                                                            | -    | -    | -   | 3.9  | 3.9 | -                                                                                              | -    | -    | -  | -    | -  | 112                                                                                   |  |

# HAV

|  0 lb + 33,100 lb |                                                                                   |          |  75.5 ft |      |  19.7 ft |                                                                                              |  32.2 ft/s |      | 360° |      | ASME B30.5 |                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|  42.3 ft          |                                                                                   |          |                                                                                           |      |                                                                                           |  126.0 ft |                                                                                              |      |      |      |            |                                                                                     |
|                   |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°                                                                                         | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                    |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°                                                                                          |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                 |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |                                                                                              |                                                                                              |      |      |      |            | ft                                                                                  |
| 18                                                                                                 |                                                                                   | 32.9     | -                                                                                         | -    | -                                                                                         | -                                                                                            | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                 |                                                                                   | 32.1     | 26.6                                                                                      | -    | -                                                                                         | -                                                                                            | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                 |                                                                                   | 30.4     | 25.4                                                                                      | -    | -                                                                                         | -                                                                                            | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                 |                                                                                   | 28.7     | 24.2                                                                                      | -    | -                                                                                         | -                                                                                            | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |
| 32                                                                                                 |                                                                                   | 26.8     | 23.0                                                                                      | -    | -                                                                                         | -                                                                                            | -                                                                                            | -    | -    | -    | -          | 32                                                                                  |
| 36                                                                                                 |                                                                                   | 25.2     | 21.7                                                                                      | -    | -                                                                                         | -                                                                                            | -                                                                                            | -    | -    | -    | -          | 36                                                                                  |
| 40                                                                                                 |                                                                                   | 23.6     | 20.6                                                                                      | 19.0 | -                                                                                         | -                                                                                            | -                                                                                            | 22.2 | 19.8 | -    | -          | 40                                                                                  |
| 48                                                                                                 |                                                                                   | 20.9     | 18.5                                                                                      | 16.7 | 15.6                                                                                      | -                                                                                            | -                                                                                            | 21.2 | 19.0 | -    | -          | 48                                                                                  |
| 56                                                                                                 |                                                                                   | 18.5     | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -                                                                                            | -                                                                                            | 19.4 | 17.7 | -    | -          | 56                                                                                  |
| 64                                                                                                 |                                                                                   | 16.3     | 15.1                                                                                      | 13.3 | 12.6                                                                                      | 10.1                                                                                         | 9.9                                                                                          | 16.9 | 16.3 | 15.0 | -          | 64                                                                                  |
| 72                                                                                                 |                                                                                   | 14.6     | 13.5                                                                                      | 11.9 | 11.5                                                                                      | 9.3                                                                                          | 9.1                                                                                          | 14.2 | 14.2 | 14.1 | 13.0       | 72                                                                                  |
| 80                                                                                                 |                                                                                   | 13.0     | 12.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7                                                                                          | 8.3                                                                                          | 11.5 | 11.5 | 12.8 | 12.1       | 80                                                                                  |
| 88                                                                                                 |                                                                                   | 11.8     | 11.1                                                                                      | 10.1 | 9.6                                                                                       | 8.1                                                                                          | 7.8                                                                                          | 9.3  | 9.3  | 11.0 | 11.0       | 88                                                                                  |
| 96                                                                                                 |                                                                                   | 10.7     | 10.2                                                                                      | 9.3  | 9.0                                                                                       | 7.7                                                                                          | 7.4                                                                                          | 7.5  | 7.5  | 9.6  | 9.6        | 96                                                                                  |
| 104                                                                                                |                                                                                   | 9.2      | 9.2                                                                                       | 8.7  | 8.4                                                                                       | -                                                                                            | -                                                                                            | 6.1  | 6.1  | 7.9  | 7.9        | 104                                                                                 |
| 112                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -                                                                                            | -                                                                                            | 4.8  | 4.8  | 6.5  | 6.5        | 112                                                                                 |
| 120                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -                                                                                            | -                                                                                            | 3.8  | 3.8  | 5.3  | 5.3        | 120                                                                                 |
| 128                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -                                                                                            | -                                                                                            | 2.9  | 2.9  | 4.2  | 4.2        | 128                                                                                 |
| 136                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -                                                                                            | -                                                                                            | -    | -    | 3.1  | 3.1        | 136                                                                                 |
| 144                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -                                                                                            | -                                                                                            | -    | -    | -    | -          | 144                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |      |     |  196.9 ft |     |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|------|-----|------------------------------------------------------------------------------------------------|-----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°  |     | 0°                                                                                             |     | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |     |      |     |                                                                                                |     |      |    |      |    | ft                                                                                    |  |
| 64                                                                                  |                                                                                     | 11.3                                                                                         | 10.6 | -    | -   | -    | -   | -                                                                                              | -   | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 8.2                                                                                          | 8.2  | -    | -   | -    | -   | 6.5                                                                                            | 6.5 | -    | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 5.9                                                                                          | 5.9  | -    | -   | -    | -   | 4.1                                                                                            | 4.1 | -    | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 4.0                                                                                          | 4.0  | 7.2  | 7.2 | -    | -   | -                                                                                              | -   | -    | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | -                                                                                            | -    | 5.2  | 5.2 | -    | -   | -                                                                                              | -   | -    | -  | -    | -  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | -                                                                                            | -    | 3.7  | 3.7 | 6.2  | -   | -                                                                                              | -   | -    | -  | -    | -  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 4.6  | 4.6 | -                                                                                              | -   | -    | -  | -    | -  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 3.3  | 3.3 | -                                                                                              | -   | -    | -  | -    | -  | 120                                                                                   |  |

# HAV

|  99,200 lb +  33,100 lb |       |  16.4 ft |      |  15.6 ft    |      |  32.2 ft/s |      | 360°    |      | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|---------|------|------------|-----|
|                         |       |  42.3 ft |      |  126.0 ft |      |                                                                                             |      |         |      |            |     |
| 0,3° 1°                                                                                                                                                                                   |       | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                      |      | 0,3° 1°                                                                                     |      | 0,3° 1° |      | 0,3° 1°    |     |
| 0°                                                                                                                                                                                        |       | 18°                                                                                       |      | 36°                                                                                          |      | 0°                                                                                          |      | 18°     |      | 36°        |     |
| ft                                                                                                                                                                                        |       |                                                                                           |      | 1,000 lb                                                                                     |      |                                                                                             |      |         |      |            | ft  |
| 10                                                                                                                                                                                        | 119.2 | 111.6                                                                                     | 89.3 | -                                                                                            | -    | -                                                                                           | -    | -       | -    | -          | 10  |
| 12                                                                                                                                                                                        | 113.1 | 106.0                                                                                     | 86.0 | 82.2                                                                                         | -    | -                                                                                           | -    | -       | -    | -          | 12  |
| 14                                                                                                                                                                                        | 107.3 | 101.1                                                                                     | 83.0 | 79.5                                                                                         | -    | -                                                                                           | -    | -       | -    | -          | 14  |
| 16                                                                                                                                                                                        | 102.0 | 96.4                                                                                      | 80.3 | 77.0                                                                                         | 67.3 | 64.9                                                                                        | -    | -       | -    | -          | 16  |
| 18                                                                                                                                                                                        | 97.4  | 92.4                                                                                      | 77.9 | 74.8                                                                                         | 65.7 | 63.6                                                                                        | -    | -       | -    | -          | 18  |
| 20                                                                                                                                                                                        | 93.1  | 88.6                                                                                      | 75.5 | 72.7                                                                                         | 64.1 | 62.4                                                                                        | -    | -       | -    | -          | 20  |
| 24                                                                                                                                                                                        | 85.9  | 82.2                                                                                      | 71.6 | 69.3                                                                                         | 60.5 | 59.4                                                                                        | -    | -       | -    | -          | 24  |
| 28                                                                                                                                                                                        | 79.8  | 76.7                                                                                      | 67.8 | 65.9                                                                                         | 57.5 | 56.6                                                                                        | 75.2 | 68.1    | -    | -          | 28  |
| 32                                                                                                                                                                                        | 74.6  | 71.9                                                                                      | 63.6 | 62.4                                                                                         | 54.9 | 54.2                                                                                        | 67.2 | 66.1    | 62.9 | -          | 32  |
| 36                                                                                                                                                                                        | 69.8  | 67.7                                                                                      | 59.7 | 58.8                                                                                         | 53.3 | 52.6                                                                                        | 61.1 | 61.0    | 58.8 | 58.6       | 36  |
| 40                                                                                                                                                                                        | 64.7  | 63.4                                                                                      | 56.1 | 55.4                                                                                         | -    | -                                                                                           | 55.5 | 55.5    | 54.6 | 54.4       | 40  |
| 48                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 46.8 | 46.6    | 46.0 | 45.9       | 48  |
| 56                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 39.0 | 38.9    | 39.3 | 39.3       | 56  |
| 64                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 33.2 | 32.9    | 32.6 | 32.5       | 64  |
| 72                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 27.5 | 27.5    | 28.1 | 28.1       | 72  |
| 80                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 23.2 | 23.2    | 23.7 | 23.7       | 80  |
| 88                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 19.7 | 19.7    | 20.1 | 20.1       | 88  |
| 96                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 17.2 | 17.2    | 17.1 | 17.1       | 96  |
| 104                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 15.8 | 15.8    | 15.6 | 15.6       | 104 |
| 112                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 13.8 | 13.8    | 14.0 | 14.0       | 112 |
| 120                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 12.2 | 12.2    | 12.4 | 12.4       | 120 |
| 128                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 10.9 | 10.9    | -    | -          | 128 |

|   |      |  181.1 ft |      |  196.9 ft |      |         |      |         |      |         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------|------|---------|------|---------|------|---------|-----|
| 0,3° 1°                                                                                                                                                                 |      | 0,3° 1°                                                                                      |      | 0,3° 1°                                                                                        |      | 0,3° 1° |      | 0,3° 1° |      | 0,3° 1° |     |
| 0°                                                                                                                                                                      |      | 18°                                                                                          |      | 36°                                                                                            |      | 0°      |      | 18°     |      | 36°     |     |
| ft                                                                                                                                                                      |      |                                                                                              |      | 1,000 lb                                                                                       |      |         |      |         |      |         | ft  |
| 48                                                                                                                                                                      | 35.2 | 28.7                                                                                         | -    | -                                                                                              | -    | 26.6    | -    | -       | -    | -       | 48  |
| 56                                                                                                                                                                      | 31.2 | 27.8                                                                                         | 30.4 | 27.5                                                                                           | 29.7 | -       | 25.0 | 22.5    | 25.1 | -       | 56  |
| 64                                                                                                                                                                      | 27.4 | 25.3                                                                                         | 26.9 | 25.0                                                                                           | 26.6 | 24.6    | 22.4 | 21.3    | 22.2 | 21.4    | 64  |
| 72                                                                                                                                                                      | 24.1 | 22.3                                                                                         | 23.9 | 22.1                                                                                           | 23.9 | 22.1    | 19.7 | 19.2    | 19.7 | 19.4    | 72  |
| 80                                                                                                                                                                      | 21.1 | 19.5                                                                                         | 21.2 | 19.7                                                                                           | 21.2 | 19.5    | 17.3 | 17.1    | 17.3 | 17.3    | 80  |
| 88                                                                                                                                                                      | 18.3 | 17.1                                                                                         | 18.6 | 17.4                                                                                           | 18.8 | 17.4    | 15.1 | 14.9    | 15.2 | 15.1    | 88  |
| 96                                                                                                                                                                      | 15.6 | 15.1                                                                                         | 16.0 | 15.3                                                                                           | 16.4 | 15.3    | 13.1 | 13.1    | 13.4 | 13.3    | 96  |
| 104                                                                                                                                                                     | 13.3 | 13.2                                                                                         | 13.7 | 13.5                                                                                           | 14.0 | 13.6    | 11.4 | 11.4    | 11.7 | 11.7    | 104 |
| 112                                                                                                                                                                     | 11.2 | 11.1                                                                                         | 11.6 | 11.6                                                                                           | 11.8 | 11.8    | 10.1 | 10.1    | 10.3 | 10.3    | 112 |
| 120                                                                                                                                                                     | 10.0 | 9.3                                                                                          | 9.7  | 9.7                                                                                            | 9.9  | 9.9     | 8.8  | 8.8     | 9.0  | 9.0     | 120 |
| 128                                                                                                                                                                     | 8.4  | 8.3                                                                                          | 8.4  | 8.4                                                                                            | 8.5  | 8.5     | 7.5  | 7.5     | 7.8  | 7.8     | 128 |
| 136                                                                                                                                                                     | 6.9  | 6.9                                                                                          | 7.3  | 7.3                                                                                            | 7.5  | 7.5     | 6.0  | 6.0     | 6.3  | 6.3     | 136 |
| 144                                                                                                                                                                     | 5.8  | 5.8                                                                                          | 6.0  | 6.0                                                                                            | 6.2  | 6.2     | 4.7  | 4.7     | 5.1  | 5.1     | 144 |
| 152                                                                                                                                                                     | 4.7  | 4.7                                                                                          | 4.9  | 4.9                                                                                            | 4.9  | 4.9     | 3.6  | 3.6     | 3.8  | 3.8     | 152 |
| 160                                                                                                                                                                     | 3.7  | 3.7                                                                                          | 3.9  | 3.9                                                                                            | -    | -       | -    | -       | 2.8  | 2.8     | 160 |



# HAV

|  99,200 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |  |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |  |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |  |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |  |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |  |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |  |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |  |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |  |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |  |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |  |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                         | 27.8 | 51.0 | 45.2 | -          | -    | 32                                                                                  |  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 40.1 | 34.9                                                                                      | 33.3 | 27.5                                                                                         | 26.4 | 49.3 | 44.1 | -          | -    | 36                                                                                  |  |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 37.4 | 33.0                                                                                      | 31.5 | 26.0                                                                                         | 24.9 | 47.5 | 43.0 | 37.4       | -    | 40                                                                                  |  |
| 48                                                                                                                                                                                        |                                                                                   | 34.7                                                                                      | 33.2 | 29.1                                                                                      | 28.1 | 23.5                                                                                         | 22.7 | 42.8 | 40.5 | 34.3       | 33.2 | 48                                                                                  |  |
| 56                                                                                                                                                                                        |                                                                                   | 30.8                                                                                      | 29.6 | 26.2                                                                                      | 25.4 | 22.0                                                                                         | 21.4 | 37.4 | 36.7 | 31.6       | 31.4 | 56                                                                                  |  |
| 64                                                                                                                                                                                        |                                                                                   | 27.2                                                                                      | 26.2 | 24.1                                                                                      | 23.5 | -                                                                                            | -    | 32.3 | 32.2 | 29.5       | 29.3 | 64                                                                                  |  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 27.0 | 27.0 | 27.4       | 27.4 | 72                                                                                  |  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 23.0 | 23.0 | 24.1       | 24.1 | 80                                                                                  |  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 20.1 | 20.1 | 20.7       | 20.7 | 88                                                                                  |  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.8 | 17.8 | 17.7       | 17.7 | 96                                                                                  |  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.3 | 15.3 | 15.1       | 15.1 | 104                                                                                 |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.3 | 13.3 | 13.8       | 13.8 | 112                                                                                 |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.5 | 11.5 | 12.1       | 12.1 | 120                                                                                 |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.7 | 10.7 | 10.5       | 10.5 | 128                                                                                 |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.9  | 9.9  | 9.7        | 9.2  | 136                                                                                 |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.9  | 8.9  | 8.6        | 8.6  | 144                                                                                 |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 25.1                                                                                         | 21.4 | -    | -    | -    | -    | 20.6                                                                                           | 17.0 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 23.3                                                                                         | 21.4 | -    | -    | -    | -    | 19.8                                                                                           | 17.0 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 21.0                                                                                         | 20.3 | 19.9 | 19.9 | -    | -    | 18.3                                                                                           | 17.0 | 17.9 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 18.7                                                                                         | 18.6 | 18.0 | 18.0 | 17.4 | 17.4 | 16.5                                                                                           | 15.7 | 16.3 | 15.9 | 15.7 | 15.7 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 16.7                                                                                         | 16.6 | 16.4 | 16.4 | 16.1 | 16.1 | 14.6                                                                                           | 14.4 | 14.7 | 14.5 | 14.3 | 14.3 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 14.7                                                                                         | 14.7 | 15.0 | 14.8 | 14.7 | 14.7 | 12.8                                                                                           | 12.8 | 13.1 | 13.1 | 13.1 | 13.0 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 13.0                                                                                         | 13.0 | 13.4 | 13.4 | 13.4 | 13.4 | 11.2                                                                                           | 11.2 | 11.6 | 11.6 | 11.9 | 11.8 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 11.6                                                                                         | 11.6 | 12.0 | 12.0 | 12.3 | 12.0 | 9.8                                                                                            | 9.8  | 10.3 | 10.3 | 10.5 | 10.5 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 10.0                                                                                         | 10.0 | 10.7 | 10.5 | 10.8 | 10.8 | 8.6                                                                                            | 8.6  | 9.0  | 9.0  | 9.2  | 9.2  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 8.4                                                                                          | 8.4  | 9.3  | 9.3  | 9.6  | 9.6  | 7.5                                                                                            | 7.5  | 7.9  | 7.9  | 8.2  | 8.2  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 7.0                                                                                          | 7.0  | 7.6  | 7.6  | 8.2  | 8.2  | 6.4                                                                                            | 6.4  | 6.9  | 6.9  | 7.1  | 7.1  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 6.2                                                                                          | 6.2  | 6.4  | 6.4  | 6.7  | 6.7  | 5.3                                                                                            | 5.3  | 6.0  | 6.0  | 6.2  | 6.2  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 5.1                                                                                          | 5.1  | 5.6  | 5.6  | 5.7  | 5.7  | 4.3                                                                                            | 4.3  | 4.9  | 4.9  | 5.3  | 5.3  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | 4.2                                                                                          | 4.2  | 4.7  | 4.7  | 5.0  | 5.0  | 3.2                                                                                            | 3.2  | 3.9  | 3.9  | 4.1  | 4.1  | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | 3.3                                                                                          | 3.3  | 3.7  | 3.7  | 3.9  | 3.9  | -                                                                                              | -    | -    | -    | -    | -    | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | 2.5                                                                                          | 2.5  | 2.8  | 2.8  | 3.0  | 3.0  | -                                                                                              | -    | -    | -    | -    | -    | 176                                                                                   |  |





# HAV

|  99,200 lb +  33,100 lb |      |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360°                                                                                         |      | ASME B30.5 |      |         |   |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------|------|---------|---|-------------------------------------------------------------------------------------|-----|
|                                                                                                          |      |  42.3 ft |      |                                                                                           |      |                                                                                              |      |  126.0 ft |      |            |      |         |   |  |     |
|                                                                                                          |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                      |      | 0,3° 1°                                                                                      |      | 0,3° 1°    |      | 0,3° 1° |   |  |     |
|                                                                                                          |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°                                                                                           |      | 18°        |      | 36°     |   |  |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |                                                                                              |      |            |      |         |   | ft                                                                                  |     |
| 14                                                                                                                                                                                        | 49.3 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -       | - | -                                                                                   | 14  |
| 16                                                                                                                                                                                        | 47.3 | 41.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -       | - | -                                                                                   | 16  |
| 18                                                                                                                                                                                        | 45.5 | 40.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -       | - | -                                                                                   | 18  |
| 20                                                                                                                                                                                        | 43.6 | 39.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -       | - | -                                                                                   | 20  |
| 24                                                                                                                                                                                        | 40.0 | 36.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -       | - | -                                                                                   | 24  |
| 28                                                                                                                                                                                        | 36.8 | 33.8                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -       | - | -                                                                                   | 28  |
| 32                                                                                                                                                                                        | 34.1 | 31.5                                                                                      | 26.4 | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -       | - | -                                                                                   | 32  |
| 36                                                                                                                                                                                        | 31.7 | 29.5                                                                                      | 24.8 | 23.6                                                                                      | -    | -                                                                                            | 33.9 | 28.3                                                                                         | -    | -          | -    | -       | - | -                                                                                   | 36  |
| 40                                                                                                                                                                                        | 29.5 | 27.5                                                                                      | 23.4 | 22.3                                                                                      | -    | -                                                                                            | 32.9 | 27.7                                                                                         | -    | -          | -    | -       | - | -                                                                                   | 40  |
| 48                                                                                                                                                                                        | 25.8 | 24.4                                                                                      | 21.0 | 20.1                                                                                      | 16.1 | 15.5                                                                                         | 30.8 | 26.3                                                                                         | -    | -          | -    | -       | - | -                                                                                   | 48  |
| 56                                                                                                                                                                                        | 22.9 | 21.7                                                                                      | 18.9 | 17.9                                                                                      | 14.6 | 14.1                                                                                         | 28.9 | 25.0                                                                                         | 22.1 | 20.7       | -    | -       | - | -                                                                                   | 56  |
| 64                                                                                                                                                                                        | 20.3 | 19.2                                                                                      | 16.9 | 16.2                                                                                      | 13.4 | 13.0                                                                                         | 27.1 | 23.8                                                                                         | 20.8 | 19.5       | -    | -       | - | -                                                                                   | 64  |
| 72                                                                                                                                                                                        | 18.1 | 17.2                                                                                      | 15.5 | 14.8                                                                                      | 12.6 | 12.1                                                                                         | 25.4 | 22.5                                                                                         | 19.6 | 18.3       | 14.3 | 13.7    | - | -                                                                                   | 72  |
| 80                                                                                                                                                                                        | 16.3 | 15.7                                                                                      | 14.2 | 13.8                                                                                      | -    | -                                                                                            | 23.3 | 21.2                                                                                         | 18.3 | 17.3       | 13.8 | 13.1    | - | -                                                                                   | 80  |
| 88                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 20.3 | 19.6                                                                                         | 17.3 | 16.5       | 13.3 | 12.6    | - | -                                                                                   | 88  |
| 96                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 17.6 | 17.3                                                                                         | 16.3 | 15.7       | 12.7 | 12.2    | - | -                                                                                   | 96  |
| 104                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.3 | 15.2                                                                                         | 15.3 | 14.9       | 12.4 | 11.9    | - | -                                                                                   | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.2 | 13.1                                                                                         | 14.0 | 14.0       | 11.9 | 11.4    | - | -                                                                                   | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.2 | 11.6                                                                                         | 12.4 | 12.4       | 11.6 | 11.2    | - | -                                                                                   | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.8 | 10.7                                                                                         | 10.8 | 10.8       | 11.1 | 10.9    | - | -                                                                                   | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.5  | 9.5                                                                                          | 9.4  | 9.4        | 9.8  | 9.8     | - | -                                                                                   | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.2  | 8.2                                                                                          | 8.8  | 8.8        | 8.8  | 8.8     | - | -                                                                                   | 144 |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.4  | 7.1                                                                                          | 7.6  | 7.6        | -    | -       | - | -                                                                                   | 152 |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.8  | 6.5                                                                                          | 6.5  | 6.5        | -    | -       | - | -                                                                                   | 160 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |          |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|----------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°       | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |          | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |
| ft                                                                                  |                                                                                     |                                                                                              |      |      | 1,000 lb |      |      |                                                                                                |      |      |      |      | ft   |                                                                                       |
| 56                                                                                  |                                                                                     | 19.6                                                                                         | 15.7 | -    | -        | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |
| 64                                                                                  |                                                                                     | 19.2                                                                                         | 15.7 | -    | -        | -    | -    | 15.8                                                                                           | 12.6 | -    | -    | -    | -    | 64                                                                                    |
| 72                                                                                  |                                                                                     | 18.8                                                                                         | 15.7 | -    | -        | -    | -    | 15.4                                                                                           | 12.6 | -    | -    | -    | -    | 72                                                                                    |
| 80                                                                                  |                                                                                     | 17.4                                                                                         | 15.7 | 15.5 | 15.3     | -    | -    | 14.9                                                                                           | 12.6 | 14.2 | -    | -    | -    | 80                                                                                    |
| 88                                                                                  |                                                                                     | 15.8                                                                                         | 15.4 | 14.5 | 14.4     | 12.8 | 12.0 | 13.9                                                                                           | 12.5 | 13.1 | 12.5 | -    | -    | 88                                                                                    |
| 96                                                                                  |                                                                                     | 14.3                                                                                         | 14.2 | 13.6 | 13.5     | 12.3 | 11.8 | 12.4                                                                                           | 12.1 | 12.0 | 11.9 | 11.2 | 11.2 | 96                                                                                    |
| 104                                                                                 |                                                                                     | 12.8                                                                                         | 12.7 | 12.5 | 12.5     | 11.8 | 11.5 | 11.0                                                                                           | 11.0 | 11.1 | 10.9 | 10.6 | 10.6 | 104                                                                                   |
| 112                                                                                 |                                                                                     | 11.4                                                                                         | 11.4 | 11.6 | 11.4     | 11.2 | 11.0 | 9.6                                                                                            | 9.6  | 10.1 | 10.1 | 9.9  | 9.9  | 112                                                                                   |
| 120                                                                                 |                                                                                     | 10.3                                                                                         | 10.1 | 10.5 | 10.5     | 10.4 | 10.4 | 8.6                                                                                            | 8.6  | 9.0  | 9.0  | 9.1  | 9.1  | 120                                                                                   |
| 128                                                                                 |                                                                                     | 8.9                                                                                          | 8.9  | 9.5  | 9.5      | 9.6  | 9.6  | 7.5                                                                                            | 7.5  | 8.0  | 7.9  | 8.3  | 8.3  | 128                                                                                   |
| 136                                                                                 |                                                                                     | 7.6                                                                                          | 7.6  | 8.4  | 8.4      | 8.8  | 8.6  | 6.6                                                                                            | 6.4  | 7.1  | 7.0  | 7.5  | 7.5  | 136                                                                                   |
| 144                                                                                 |                                                                                     | 6.2                                                                                          | 6.2  | 7.3  | 7.3      | 7.8  | 7.8  | 5.6                                                                                            | 5.5  | 6.2  | 6.2  | 6.4  | 6.4  | 144                                                                                   |
| 152                                                                                 |                                                                                     | 5.2                                                                                          | 5.2  | 6.2  | 6.2      | 6.9  | 6.9  | 4.7                                                                                            | 4.7  | 5.4  | 5.4  | 5.6  | 5.6  | 152                                                                                   |
| 160                                                                                 |                                                                                     | 4.7                                                                                          | 4.7  | 5.0  | 5.0      | 5.7  | 5.7  | 3.9                                                                                            | 3.9  | 4.6  | 4.6  | 4.8  | 4.8  | 160                                                                                   |
| 168                                                                                 |                                                                                     | 3.9                                                                                          | 3.9  | 4.3  | 4.3      | 4.6  | 4.6  | -                                                                                              | -    | 3.8  | 3.8  | 4.1  | 4.1  | 168                                                                                   |
| 176                                                                                 |                                                                                     | 3.0                                                                                          | 3.0  | 3.6  | 3.6      | 3.8  | 3.8  | -                                                                                              | -    | 3.0  | 3.0  | 3.4  | 3.4  | 176                                                                                   |
| 184                                                                                 |                                                                                     | -                                                                                            | -    | 3.0  | 3.0      | 3.2  | 3.2  | -                                                                                              | -    | -    | -    | -    | -    | 184                                                                                   |



# HAV

|  99,200 lb +  33,100 lb |                                                                                   |  75.5 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |     |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-----|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |     |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°  |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      |                                                                                           |      |                                                                                              |      | 0°   |      |            |     |                                                                                     |     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |     | ft                                                                                  |     |
| 18                                                                                                                                                                                        | 32.9                                                                              | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | 18                                                                                  |     |
| 20                                                                                                                                                                                        | 32.1                                                                              | 26.6                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | 20                                                                                  |     |
| 24                                                                                                                                                                                        | 30.4                                                                              | 25.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | 24                                                                                  |     |
| 28                                                                                                                                                                                        | 28.7                                                                              | 24.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | 28                                                                                  |     |
| 32                                                                                                                                                                                        | 26.8                                                                              | 23.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | 32                                                                                  |     |
| 36                                                                                                                                                                                        | 25.2                                                                              | 21.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -   | 36                                                                                  |     |
| 40                                                                                                                                                                                        | 23.6                                                                              | 20.6                                                                                      | 19.0 | -                                                                                         | -    | -                                                                                            | 22.2 | 19.8 | -    | -          | -   | 40                                                                                  |     |
| 48                                                                                                                                                                                        | 20.9                                                                              | 18.5                                                                                      | 16.7 | 15.6                                                                                      | -    | -                                                                                            | 21.2 | 19.0 | -    | -          | -   | 48                                                                                  |     |
| 56                                                                                                                                                                                        | 18.5                                                                              | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -    | -                                                                                            | 20.3 | 18.2 | -    | -          | -   | 56                                                                                  |     |
| 64                                                                                                                                                                                        | 16.3                                                                              | 15.1                                                                                      | 13.3 | 12.6                                                                                      | 10.1 | 9.9                                                                                          | 19.2 | 17.4 | 15.0 | -          | -   | 64                                                                                  |     |
| 72                                                                                                                                                                                        | 14.6                                                                              | 13.5                                                                                      | 11.9 | 11.5                                                                                      | 9.3  | 9.1                                                                                          | 18.1 | 16.6 | 14.1 | 13.0       | -   | 72                                                                                  |     |
| 80                                                                                                                                                                                        | 13.0                                                                              | 12.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7  | 8.3                                                                                          | 17.0 | 15.7 | 13.3 | 12.3       | 9.6 | 9.2                                                                                 | 80  |
| 88                                                                                                                                                                                        | 11.8                                                                              | 11.1                                                                                      | 10.1 | 9.6                                                                                       | 8.1  | 7.8                                                                                          | 16.0 | 14.8 | 12.5 | 11.7       | 9.2 | 8.7                                                                                 | 88  |
| 96                                                                                                                                                                                        | 10.8                                                                              | 10.2                                                                                      | 9.3  | 9.0                                                                                       | 7.7  | 7.4                                                                                          | 15.1 | 13.9 | 11.7 | 11.0       | 8.8 | 8.3                                                                                 | 96  |
| 104                                                                                                                                                                                       | 10.0                                                                              | 9.4                                                                                       | 8.7  | 8.4                                                                                       | -    | -                                                                                            | 14.2 | 13.3 | 11.1 | 10.4       | 8.4 | 8.0                                                                                 | 104 |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.3 | 12.5 | 10.6 | 10.1       | 8.1 | 7.7                                                                                 | 112 |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.7 | 11.6 | 10.1 | 9.6        | 7.9 | 7.4                                                                                 | 120 |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.2 | 10.2 | 9.7  | 9.1        | 7.6 | 7.3                                                                                 | 128 |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.9  | 8.9  | 9.3  | 8.9        | 7.3 | 7.1                                                                                 | 136 |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.0  | 8.0  | 8.6  | 8.4        | 7.3 | 6.8                                                                                 | 144 |
| 152                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.4  | 7.4  | 7.5  | 7.5        | 7.1 | 6.8                                                                                 | 152 |
| 160                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.4  | 6.4  | 6.5  | 6.5        | 6.7 | 6.6                                                                                 | 160 |
| 168                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.5  | 5.5  | 6.0  | 6.0        | -   | -                                                                                   | 168 |
| 176                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.7  | 4.7  | 5.2  | 5.2        | -   | -                                                                                   | 176 |
| 184                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.5  | 4.5  | -    | -          | -   | -                                                                                   | 184 |

|   |           |  181.1 ft |         |          |         |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|----------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1°  | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°     | 0°       | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |         |          |         |                                                                                                |         |         |         | ft                                                                                    |     |
| 64                                                                                                                                                                      | 14.4 11.2 | - -                                                                                          | - -     | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 14.1 11.2 | - -                                                                                          | - -     | 11.7 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 13.8 11.2 | - -                                                                                          | - -     | 11.4 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 13.5 11.2 | 11.5 10.6                                                                                    | - -     | 11.2 8.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 12.8 11.2 | 11.0 10.2                                                                                    | - -     | 10.9 8.8 | 10.3 -  | - -                                                                                            | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 11.8 11.2 | 10.4 9.8                                                                                     | 8.2 -   | 10.2 8.8 | 9.6 8.8 | - -                                                                                            | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | 10.7 10.5 | 9.9 9.5                                                                                      | 7.9 7.5 | 9.2 8.8  | 9.0 8.8 | 7.7 7.3                                                                                        | 7.7 7.3 | 7.7 7.3 | 7.7 7.3 | 112                                                                                   | 112 |
| 120                                                                                                                                                                     | 9.7 9.7   | 9.4 9.1                                                                                      | 7.7 7.2 | 8.2 8.1  | 8.3 8.3 | 7.7 7.1                                                                                        | 7.7 7.1 | 7.7 7.1 | 7.7 7.1 | 120                                                                                   | 120 |
| 128                                                                                                                                                                     | 8.8 8.7   | 8.7 8.6                                                                                      | 7.5 7.1 | 7.3 7.2  | 7.6 7.6 | 7.3 6.9                                                                                        | 7.3 6.9 | 7.3 6.9 | 7.3 6.9 | 128                                                                                   | 128 |
| 136                                                                                                                                                                     | 7.6 7.6   | 8.1 8.1                                                                                      | 7.3 6.9 | 6.4 6.2  | 6.8 6.8 | 6.9 6.7                                                                                        | 6.9 6.7 | 6.9 6.7 | 6.9 6.7 | 136                                                                                   | 136 |
| 144                                                                                                                                                                     | 6.4 6.4   | 7.3 7.3                                                                                      | 7.1 6.8 | 5.5 5.3  | 6.0 6.0 | 6.4 6.2                                                                                        | 6.4 6.2 | 6.4 6.2 | 6.4 6.2 | 144                                                                                   | 144 |
| 152                                                                                                                                                                     | 5.4 5.4   | 6.5 6.5                                                                                      | 6.7 6.4 | 4.5 4.5  | 5.4 5.4 | 5.7 5.7                                                                                        | 5.7 5.7 | 5.7 5.7 | 5.7 5.7 | 152                                                                                   | 152 |
| 160                                                                                                                                                                     | 4.3 4.3   | 5.6 5.6                                                                                      | 6.0 6.0 | 3.7 3.7  | 4.6 4.6 | 5.0 5.0                                                                                        | 5.0 5.0 | 5.0 5.0 | 5.0 5.0 | 160                                                                                   | 160 |
| 168                                                                                                                                                                     | 3.7 3.7   | 4.6 4.6                                                                                      | 5.3 5.3 | - -      | 3.9 3.9 | 4.3 4.3                                                                                        | 4.3 4.3 | 4.3 4.3 | 4.3 4.3 | 168                                                                                   | 168 |
| 176                                                                                                                                                                     | 3.2 3.2   | 3.7 3.7                                                                                      | 4.3 4.3 | - -      | 3.2 3.2 | 3.6 3.6                                                                                        | 3.6 3.6 | 3.6 3.6 | 3.6 3.6 | 176                                                                                   | 176 |
| 184                                                                                                                                                                     | - -       | 3.0 3.0                                                                                      | 3.4 3.4 | - -      | - -     | 3.1 3.0                                                                                        | 3.1 3.0 | 3.1 3.0 | 3.1 3.0 | 184                                                                                   | 184 |

# HAV

|  77,200 lb +  33,100 lb |             |  16.4 ft |           |  15.6 ft |           |  32.2 ft/s  |     | 360°    |     | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----|---------|-----|------------|-----|
|                         |             |  42.3 ft |           |                                                                                           |           |  126.0 ft |     |         |     |            |     |
| 0,3° 1°                                                                                                                                                                                   |             | 0,3° 1°                                                                                   |           | 0,3° 1°                                                                                   |           | 0,3° 1°                                                                                      |     | 0,3° 1° |     | 0,3° 1°    |     |
| 0°                                                                                                                                                                                        |             | 18°                                                                                       |           | 36°                                                                                       |           | 0°                                                                                           |     | 18°     |     | 36°        |     |
| ft                                                                                                                                                                                        |             |                                                                                           |           | 1,000 lb                                                                                  |           |                                                                                              |     |         |     | ft         |     |
| 10                                                                                                                                                                                        | 119.2 111.6 | 89.3 -                                                                                    | - -       | - -                                                                                       | - -       | - -                                                                                          | - - | - -     | - - | - -        | 10  |
| 12                                                                                                                                                                                        | 113.1 106.0 | 86.0 82.2                                                                                 | - -       | - -                                                                                       | - -       | - -                                                                                          | - - | - -     | - - | - -        | 12  |
| 14                                                                                                                                                                                        | 107.3 101.1 | 83.0 79.5                                                                                 | - -       | - -                                                                                       | - -       | - -                                                                                          | - - | - -     | - - | - -        | 14  |
| 16                                                                                                                                                                                        | 102.0 96.4  | 80.3 77.0                                                                                 | 67.3 64.9 | - -                                                                                       | - -       | - -                                                                                          | - - | - -     | - - | - -        | 16  |
| 18                                                                                                                                                                                        | 97.4 92.4   | 77.9 74.8                                                                                 | 65.7 63.6 | - -                                                                                       | - -       | - -                                                                                          | - - | - -     | - - | - -        | 18  |
| 20                                                                                                                                                                                        | 93.1 88.6   | 75.5 72.7                                                                                 | 64.1 62.4 | - -                                                                                       | - -       | - -                                                                                          | - - | - -     | - - | - -        | 20  |
| 24                                                                                                                                                                                        | 85.9 82.2   | 71.6 69.3                                                                                 | 60.5 59.4 | - -                                                                                       | - -       | - -                                                                                          | - - | - -     | - - | - -        | 24  |
| 28                                                                                                                                                                                        | 79.8 76.7   | 67.8 65.9                                                                                 | 57.5 56.6 | 75.2 68.1                                                                                 | - -       | - -                                                                                          | - - | - -     | - - | - -        | 28  |
| 32                                                                                                                                                                                        | 74.6 71.9   | 63.6 62.4                                                                                 | 54.9 54.2 | 67.2 66.1                                                                                 | 62.9 -    | - -                                                                                          | - - | - -     | - - | - -        | 32  |
| 36                                                                                                                                                                                        | 67.1 65.7   | 59.7 58.8                                                                                 | 53.3 52.6 | 61.1 59.8                                                                                 | 58.8 58.6 | 51.1 -                                                                                       | - - | - -     | - - | - -        | 36  |
| 40                                                                                                                                                                                        | 59.0 59.0   | 55.7 55.1                                                                                 | - -       | 55.2 52.9                                                                                 | 54.5 54.3 | 49.0 49.0                                                                                    | - - | - -     | - - | - -        | 40  |
| 48                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 42.9 42.6                                                                                 | 43.7 43.6 | 43.3 43.3                                                                                    | - - | - -     | - - | - -        | 48  |
| 56                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 34.7 34.7                                                                                 | 34.4 34.4 | 35.0 35.0                                                                                    | - - | - -     | - - | - -        | 56  |
| 64                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 27.9 27.9                                                                                 | 28.8 28.8 | 28.7 28.7                                                                                    | - - | - -     | - - | - -        | 64  |
| 72                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 23.2 23.2                                                                                 | 23.5 23.5 | 23.9 23.9                                                                                    | - - | - -     | - - | - -        | 72  |
| 80                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 20.4 20.4                                                                                 | 20.3 20.2 | 20.3 20.3                                                                                    | - - | - -     | - - | - -        | 80  |
| 88                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 17.4 17.4                                                                                 | 17.8 17.8 | 18.1 18.1                                                                                    | - - | - -     | - - | - -        | 88  |
| 96                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 14.8 14.8                                                                                 | 15.3 15.3 | 15.4 15.4                                                                                    | - - | - -     | - - | - -        | 96  |
| 104                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 12.8 12.8                                                                                 | 13.1 13.1 | 13.2 13.2                                                                                    | - - | - -     | - - | - -        | 104 |
| 112                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 11.2 11.2                                                                                 | 11.2 11.2 | - -                                                                                          | - - | - -     | - - | - -        | 112 |
| 120                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 10.0 10.0                                                                                 | 10.0 10.0 | - -                                                                                          | - - | - -     | - - | - -        | 120 |
| 128                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 8.8 8.8                                                                                   | - -       | - -                                                                                          | - - | - -     | - - | - -        | 128 |

|   |           |  181.1 ft |           |           |           |  196.9 ft |     |         |     |         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|-----------|------------------------------------------------------------------------------------------------|-----|---------|-----|---------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      |           | 0,3° 1°   |           | 0,3° 1°                                                                                        |     | 0,3° 1° |     | 0,3° 1° |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          |           | 36°       |           | 0°                                                                                             |     | 18°     |     | 36°     |     |
| ft                                                                                                                                                                      |           |                                                                                              |           | 1,000 lb  |           |                                                                                                |     |         |     | ft      |     |
| 48                                                                                                                                                                      | 35.2 28.7 | - -                                                                                          | - -       | - -       | - -       | 26.6 -                                                                                         | - - | - -     | - - | - -     | 48  |
| 56                                                                                                                                                                      | 31.2 27.8 | 30.4 27.5                                                                                    | 29.7 -    | 25.0 22.5 | 25.1 -    | - -                                                                                            | - - | - -     | - - | - -     | 56  |
| 64                                                                                                                                                                      | 26.6 25.3 | 26.9 25.0                                                                                    | 26.6 24.6 | 22.4 21.3 | 22.2 21.4 | 22.1 21.4                                                                                      | - - | - -     | - - | - -     | 64  |
| 72                                                                                                                                                                      | 21.7 21.7 | 22.4 22.1                                                                                    | 23.0 22.1 | 19.7 19.2 | 19.7 19.4 | 19.5 19.4                                                                                      | - - | - -     | - - | - -     | 72  |
| 80                                                                                                                                                                      | 18.1 17.8 | 18.5 18.5                                                                                    | 18.9 18.9 | 17.2 17.0 | 17.3 17.3 | 17.5 17.3                                                                                      | - - | - -     | - - | - -     | 80  |
| 88                                                                                                                                                                      | 15.4 14.8 | 15.3 15.3                                                                                    | 15.8 15.8 | 14.5 14.5 | 15.1 15.1 | 15.4 15.4                                                                                      | - - | - -     | - - | - -     | 88  |
| 96                                                                                                                                                                      | 12.9 12.8 | 13.1 13.1                                                                                    | 13.3 13.3 | 12.0 12.0 | 12.6 12.6 | 12.9 12.9                                                                                      | - - | - -     | - - | - -     | 96  |
| 104                                                                                                                                                                     | 10.8 10.8 | 11.3 11.3                                                                                    | 11.5 11.5 | 9.7 9.7   | 10.2 10.2 | 10.6 10.6                                                                                      | - - | - -     | - - | - -     | 104 |
| 112                                                                                                                                                                     | 8.7 8.7   | 9.2 9.2                                                                                      | 9.6 9.6   | 7.8 7.8   | 8.3 8.3   | 8.7 8.7                                                                                        | - - | - -     | - - | - -     | 112 |
| 120                                                                                                                                                                     | 7.1 7.1   | 7.6 7.6                                                                                      | 7.8 7.8   | 6.0 6.0   | 6.5 6.5   | 6.9 6.9                                                                                        | - - | - -     | - - | - -     | 120 |
| 128                                                                                                                                                                     | 5.6 5.6   | 6.1 6.1                                                                                      | 6.3 6.3   | 4.5 4.5   | 5.0 5.0   | 5.3 5.3                                                                                        | - - | - -     | - - | - -     | 128 |
| 136                                                                                                                                                                     | 4.4 4.4   | 4.7 4.7                                                                                      | 4.9 4.9   | 3.3 3.3   | 3.6 3.6   | 4.0 4.0                                                                                        | - - | - -     | - - | - -     | 136 |
| 144                                                                                                                                                                     | 3.4 3.4   | 3.6 3.6                                                                                      | 3.6 3.6   | - -       | 2.5 2.5   | 2.7 2.7                                                                                        | - - | - -     | - - | - -     | 144 |



# HAV

|  77,200 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |  |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |  |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |  |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |  |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |  |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |  |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |  |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |  |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |  |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |  |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                         | 27.8 | 51.0 | 45.2 | -          | -    | 32                                                                                  |  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 40.1 | 34.9                                                                                      | 33.3 | 27.5                                                                                         | 26.4 | 49.3 | 44.1 | -          | -    | 36                                                                                  |  |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 37.4 | 33.0                                                                                      | 31.5 | 26.0                                                                                         | 24.9 | 47.5 | 43.0 | 37.4       | -    | 40                                                                                  |  |
| 48                                                                                                                                                                                        |                                                                                   | 34.7                                                                                      | 33.2 | 29.1                                                                                      | 28.1 | 23.5                                                                                         | 22.7 | 42.1 | 40.0 | 34.3       | 33.2 | 48                                                                                  |  |
| 56                                                                                                                                                                                        |                                                                                   | 30.8                                                                                      | 29.6 | 26.2                                                                                      | 25.4 | 22.0                                                                                         | 21.4 | 34.3 | 34.2 | 31.6       | 31.4 | 56                                                                                  |  |
| 64                                                                                                                                                                                        |                                                                                   | 27.2                                                                                      | 26.2 | 24.1                                                                                      | 23.5 | -                                                                                            | -    | 27.9 | 27.9 | 28.8       | 28.8 | 64                                                                                  |  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 23.9 | 23.9 | 24.4       | 24.4 | 72                                                                                  |  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 20.0 | 20.0 | 20.2       | 20.2 | 80                                                                                  |  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.0 | 17.0 | 17.6       | 17.6 | 88                                                                                  |  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.0 | 15.0 | 15.1       | 15.1 | 96                                                                                  |  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.4 | 13.4 | 13.4       | 12.8 | 104                                                                                 |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.6 | 11.6 | 11.6       | 11.6 | 112                                                                                 |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.0 | 10.0 | 10.5       | 10.5 | 120                                                                                 |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.8  | 8.8  | 9.1        | 9.1  | 128                                                                                 |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.7  | 7.7  | 8.0        | 8.0  | 136                                                                                 |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.9  | 6.9  | 6.7        | 6.7  | 144                                                                                 |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 25.1                                                                                         | 21.4 | -    | -    | -    | -    | 20.6                                                                                           | 17.0 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 23.3                                                                                         | 21.4 | -    | -    | -    | -    | 19.8                                                                                           | 17.0 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 21.0                                                                                         | 20.3 | 19.9 | 19.9 | -    | -    | 18.3                                                                                           | 17.0 | 17.9 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 18.5                                                                                         | 18.3 | 18.0 | 18.0 | 17.4 | 17.4 | 16.5                                                                                           | 15.7 | 16.3 | 15.9 | 15.7 | 15.7 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 15.4                                                                                         | 15.4 | 16.3 | 16.3 | 16.1 | 16.1 | 14.6                                                                                           | 14.4 | 14.7 | 14.5 | 14.3 | 14.3 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 12.9                                                                                         | 12.9 | 14.0 | 14.0 | 14.6 | 14.6 | 12.4                                                                                           | 12.4 | 13.1 | 13.1 | 13.1 | 13.0 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 11.0                                                                                         | 11.0 | 11.7 | 11.7 | 12.4 | 12.4 | 10.2                                                                                           | 10.2 | 11.4 | 11.4 | 11.9 | 11.8 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 9.4                                                                                          | 9.4  | 10.1 | 10.1 | 10.5 | 10.5 | 8.3                                                                                            | 8.3  | 9.6  | 9.6  | 10.5 | 10.5 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 7.8                                                                                          | 7.8  | 8.7  | 8.7  | 9.0  | 9.0  | 6.7                                                                                            | 6.7  | 7.8  | 7.8  | 8.6  | 8.6  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 6.3                                                                                          | 6.3  | 7.0  | 7.0  | 7.7  | 7.7  | 5.2                                                                                            | 5.2  | 6.2  | 6.2  | 6.8  | 6.8  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 4.9                                                                                          | 4.9  | 5.8  | 5.8  | 6.3  | 6.3  | 4.0                                                                                            | 4.0  | 4.7  | 4.7  | 5.4  | 5.4  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 3.8                                                                                          | 3.8  | 4.5  | 4.5  | 4.9  | 4.9  | 2.9                                                                                            | 2.9  | 3.6  | 3.6  | 4.0  | 4.0  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 2.8                                                                                          | 2.8  | 3.4  | 3.4  | 3.8  | 3.8  | -                                                                                              | -    | -    | -    | 2.9  | 2.9  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 2.7  | 2.7  | -                                                                                              | -    | -    | -    | -    | -    | 160                                                                                   |  |

# HAV

|  77,200 lb +  33,100 lb |      |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |     |
|                                                                                                                                                                                           |      | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |                                                                                     |     |
|                                                                                                                                                                                           |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°                                                                                 |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        | 49.3 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 14  |
| 16                                                                                                                                                                                        | 47.3 | 41.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 16  |
| 18                                                                                                                                                                                        | 45.5 | 40.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 18  |
| 20                                                                                                                                                                                        | 43.6 | 39.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 20  |
| 24                                                                                                                                                                                        | 40.0 | 36.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 24  |
| 28                                                                                                                                                                                        | 36.8 | 33.8                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 28  |
| 32                                                                                                                                                                                        | 34.1 | 31.5                                                                                      | 26.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 32  |
| 36                                                                                                                                                                                        | 31.7 | 29.5                                                                                      | 24.8 | 23.6                                                                                      | -    | -                                                                                            | 33.9 | 28.3 | -    | -          | -    | -                                                                                   | 36  |
| 40                                                                                                                                                                                        | 29.5 | 27.5                                                                                      | 23.4 | 22.3                                                                                      | -    | -                                                                                            | 32.9 | 27.7 | -    | -          | -    | -                                                                                   | 40  |
| 48                                                                                                                                                                                        | 25.8 | 24.4                                                                                      | 21.0 | 20.1                                                                                      | 16.1 | 15.5                                                                                         | 30.8 | 26.3 | -    | -          | -    | -                                                                                   | 48  |
| 56                                                                                                                                                                                        | 22.9 | 21.7                                                                                      | 18.9 | 17.9                                                                                      | 14.6 | 14.1                                                                                         | 28.9 | 25.0 | 22.1 | 20.7       | -    | -                                                                                   | 56  |
| 64                                                                                                                                                                                        | 20.3 | 19.2                                                                                      | 16.9 | 16.2                                                                                      | 13.4 | 13.0                                                                                         | 27.1 | 23.8 | 20.8 | 19.5       | -    | -                                                                                   | 64  |
| 72                                                                                                                                                                                        | 18.1 | 17.2                                                                                      | 15.5 | 14.8                                                                                      | 12.6 | 12.1                                                                                         | 23.7 | 22.5 | 19.6 | 18.3       | 14.3 | 13.7                                                                                | 72  |
| 80                                                                                                                                                                                        | 16.3 | 15.7                                                                                      | 14.2 | 13.8                                                                                      | -    | -                                                                                            | 20.0 | 20.0 | 18.3 | 17.3       | 13.8 | 13.1                                                                                | 80  |
| 88                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 17.2 | 16.7 | 17.3 | 16.5       | 13.3 | 12.6                                                                                | 88  |
| 96                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.1 | 14.4 | 15.6 | 15.4       | 12.7 | 12.2                                                                                | 96  |
| 104                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.0 | 13.0 | 13.3 | 13.3       | 12.4 | 11.9                                                                                | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.6 | 11.2 | 11.6 | 11.6       | 11.8 | 11.4                                                                                | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.3 | 9.9  | 10.4 | 10.4       | 10.5 | 10.4                                                                                | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.9  | 8.8  | 9.1  | 9.1        | 9.5  | 9.5                                                                                 | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.1  | 8.1  | 8.1  | 8.1        | 8.3  | 8.3                                                                                 | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.1  | 7.1  | 7.3  | 7.3        | 7.5  | 7.5                                                                                 | 144 |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.1  | 6.1  | 6.5  | 6.5        | -    | -                                                                                   | 152 |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.3  | 5.3  | 5.6  | 5.6        | -    | -                                                                                   | 160 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |          |  196.9 ft |      |      |      |      |      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°       | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |          | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      |      | 1,000 lb |                                                                                                |      |      |      |      | ft   |                                                                                       |
| 56                                                                                  |                                                                                     | 19.6                                                                                         | 15.7 | -    | -    | -    | -        | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |
| 64                                                                                  |                                                                                     | 19.2                                                                                         | 15.7 | -    | -    | -    | -        | 15.8                                                                                           | 12.6 | -    | -    | -    | -    | 64                                                                                    |
| 72                                                                                  |                                                                                     | 18.8                                                                                         | 15.7 | -    | -    | -    | -        | 15.4                                                                                           | 12.6 | -    | -    | -    | -    | 72                                                                                    |
| 80                                                                                  |                                                                                     | 17.4                                                                                         | 15.7 | 15.5 | 15.3 | -    | -        | 14.9                                                                                           | 12.6 | 14.2 | -    | -    | -    | 80                                                                                    |
| 88                                                                                  |                                                                                     | 15.6                                                                                         | 15.1 | 14.5 | 14.4 | 12.8 | 12.0     | 13.9                                                                                           | 12.5 | 13.1 | 12.5 | -    | -    | 88                                                                                    |
| 96                                                                                  |                                                                                     | 13.3                                                                                         | 13.2 | 13.6 | 13.5 | 12.3 | 11.8     | 12.3                                                                                           | 11.9 | 12.0 | 11.9 | 11.2 | 11.2 | 96                                                                                    |
| 104                                                                                 |                                                                                     | 11.1                                                                                         | 11.1 | 12.5 | 12.5 | 11.8 | 11.5     | 10.2                                                                                           | 10.2 | 11.1 | 10.9 | 10.6 | 10.6 | 104                                                                                   |
| 112                                                                                 |                                                                                     | 9.4                                                                                          | 9.4  | 10.9 | 10.9 | 11.2 | 11.0     | 8.5                                                                                            | 8.5  | 10.1 | 10.1 | 9.9  | 9.9  | 112                                                                                   |
| 120                                                                                 |                                                                                     | 8.3                                                                                          | 8.3  | 9.3  | 9.3  | 10.3 | 10.3     | 7.0                                                                                            | 7.0  | 8.7  | 8.7  | 9.1  | 9.1  | 120                                                                                   |
| 128                                                                                 |                                                                                     | 6.9                                                                                          | 6.9  | 7.8  | 7.7  | 8.8  | 8.8      | 5.6                                                                                            | 5.6  | 7.2  | 7.2  | 8.3  | 8.3  | 128                                                                                   |
| 136                                                                                 |                                                                                     | 5.8                                                                                          | 5.8  | 6.9  | 6.8  | 7.2  | 7.2      | 4.4                                                                                            | 4.4  | 5.8  | 5.8  | 7.1  | 7.1  | 136                                                                                   |
| 144                                                                                 |                                                                                     | 4.5                                                                                          | 4.5  | 5.6  | 5.6  | 6.4  | 6.4      | 3.4                                                                                            | 3.4  | 4.7  | 4.7  | 5.8  | 5.8  | 144                                                                                   |
| 152                                                                                 |                                                                                     | 3.6                                                                                          | 3.6  | 4.5  | 4.5  | 5.1  | 5.1      | -                                                                                              | -    | 3.6  | 3.6  | 4.5  | 4.5  | 152                                                                                   |
| 160                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5  | 4.1  | 4.1      | -                                                                                              | -    | -    | -    | 3.4  | 3.4  | 160                                                                                   |



# HAV

|  77,200 lb +  33,100 lb |      |  75.5 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360°                                                                                         |      | ASME B30.5 |     |     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------|-----|-----|-----|
|                         |      |  42.3 ft |      |                                                                                           |      |                                                                                              |      |  126.0 ft |      |            |     |     |     |
|                                                                                                                                                                                           |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                      |      | 0,3° 1°                                                                                      |      | 0,3° 1°    |     |     |     |
|                                                                                                                                                                                           |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°                                                                                           |      | 18°        |     | 36° |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |                                                                                              |      |            |     | ft  |     |
| 18                                                                                                                                                                                        | 32.9 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -   | -   | 18  |
| 20                                                                                                                                                                                        | 32.1 | 26.6                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -   | -   | 20  |
| 24                                                                                                                                                                                        | 30.4 | 25.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -   | -   | 24  |
| 28                                                                                                                                                                                        | 28.7 | 24.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -   | -   | 28  |
| 32                                                                                                                                                                                        | 26.8 | 23.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -   | -   | 32  |
| 36                                                                                                                                                                                        | 25.2 | 21.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -   | -   | 36  |
| 40                                                                                                                                                                                        | 23.6 | 20.6                                                                                      | 19.0 | -                                                                                         | -    | -                                                                                            | 22.2 | 19.8                                                                                         | -    | -          | -   | -   | 40  |
| 48                                                                                                                                                                                        | 20.9 | 18.5                                                                                      | 16.7 | 15.6                                                                                      | -    | -                                                                                            | 21.2 | 19.0                                                                                         | -    | -          | -   | -   | 48  |
| 56                                                                                                                                                                                        | 18.5 | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -    | -                                                                                            | 20.3 | 18.2                                                                                         | -    | -          | -   | -   | 56  |
| 64                                                                                                                                                                                        | 16.3 | 15.1                                                                                      | 13.3 | 12.6                                                                                      | 10.1 | 9.9                                                                                          | 19.2 | 17.4                                                                                         | 15.0 | -          | -   | -   | 64  |
| 72                                                                                                                                                                                        | 14.6 | 13.5                                                                                      | 11.9 | 11.5                                                                                      | 9.3  | 9.1                                                                                          | 18.1 | 16.6                                                                                         | 14.1 | 13.0       | -   | -   | 72  |
| 80                                                                                                                                                                                        | 13.0 | 12.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7  | 8.3                                                                                          | 17.0 | 15.7                                                                                         | 13.3 | 12.3       | 9.6 | 9.2 | 80  |
| 88                                                                                                                                                                                        | 11.8 | 11.1                                                                                      | 10.1 | 9.6                                                                                       | 8.1  | 7.8                                                                                          | 16.0 | 14.8                                                                                         | 12.5 | 11.7       | 9.2 | 8.7 | 88  |
| 96                                                                                                                                                                                        | 10.8 | 10.2                                                                                      | 9.3  | 9.0                                                                                       | 7.7  | 7.4                                                                                          | 14.5 | 13.9                                                                                         | 11.7 | 11.0       | 8.8 | 8.3 | 96  |
| 104                                                                                                                                                                                       | 10.0 | 9.4                                                                                       | 8.7  | 8.4                                                                                       | -    | -                                                                                            | 12.4 | 12.4                                                                                         | 11.1 | 10.4       | 8.4 | 8.0 | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.0 | 10.9                                                                                         | 10.6 | 10.1       | 8.1 | 7.7 | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.8  | 9.7                                                                                          | 10.0 | 9.6        | 7.9 | 7.4 | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.5  | 8.5                                                                                          | 9.0  | 8.8        | 7.6 | 7.3 | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.5  | 7.5                                                                                          | 8.1  | 8.1        | 7.3 | 7.1 | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.6  | 6.6                                                                                          | 7.1  | 7.1        | 7.1 | 6.8 | 144 |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.1  | 6.1                                                                                          | 6.3  | 6.3        | 6.7 | 6.5 | 152 |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.3  | 5.3                                                                                          | 5.5  | 5.5        | 5.8 | 5.8 | 160 |
| 168                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.5  | 4.5                                                                                          | 5.0  | 5.0        | -   | -   | 168 |
| 176                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.8  | 3.8                                                                                          | 4.3  | 4.3        | -   | -   | 176 |
| 184                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.3  | 3.3                                                                                          | -    | -          | -   | -   | 184 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |     |  196.9 ft |     |      |     |      |     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |     | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |     |                                                                                                |     |      |     |      |     | ft                                                                                    |
| 64                                                                                  |                                                                                     | 14.4                                                                                         | 11.2 | -    | -    | -        | -   | -                                                                                              | -   | -    | -   | -    | -   | 64                                                                                    |
| 72                                                                                  |                                                                                     | 14.1                                                                                         | 11.2 | -    | -    | -        | -   | 11.7                                                                                           | 8.8 | -    | -   | -    | -   | 72                                                                                    |
| 80                                                                                  |                                                                                     | 13.8                                                                                         | 11.2 | -    | -    | -        | -   | 11.4                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |
| 88                                                                                  |                                                                                     | 13.5                                                                                         | 11.2 | 11.5 | 10.6 | -        | -   | 11.2                                                                                           | 8.8 | -    | -   | -    | -   | 88                                                                                    |
| 96                                                                                  |                                                                                     | 12.4                                                                                         | 11.2 | 11.0 | 10.2 | -        | -   | 10.9                                                                                           | 8.8 | 10.3 | -   | -    | -   | 96                                                                                    |
| 104                                                                                 |                                                                                     | 10.4                                                                                         | 10.3 | 10.4 | 9.8  | 8.2      | -   | 9.5                                                                                            | 8.8 | 9.6  | 8.8 | -    | -   | 104                                                                                   |
| 112                                                                                 |                                                                                     | 8.8                                                                                          | 8.8  | 9.9  | 9.5  | 7.9      | 7.5 | 7.8                                                                                            | 7.8 | 9.0  | 8.8 | 7.7  | 7.3 | 112                                                                                   |
| 120                                                                                 |                                                                                     | 7.8                                                                                          | 7.7  | 9.2  | 9.0  | 7.7      | 7.2 | 6.3                                                                                            | 6.3 | 8.2  | 8.2 | 7.7  | 7.1 | 120                                                                                   |
| 128                                                                                 |                                                                                     | 6.5                                                                                          | 6.5  | 7.8  | 7.8  | 7.5      | 7.1 | 5.1                                                                                            | 5.1 | 7.2  | 7.2 | 7.3  | 6.9 | 128                                                                                   |
| 136                                                                                 |                                                                                     | 5.3                                                                                          | 5.3  | 6.6  | 6.6  | 7.3      | 6.9 | 4.0                                                                                            | 4.0 | 5.8  | 5.8 | 6.9  | 6.7 | 136                                                                                   |
| 144                                                                                 |                                                                                     | 4.2                                                                                          | 4.2  | 5.8  | 5.8  | 6.9      | 6.8 | 2.9                                                                                            | 2.9 | 4.7  | 4.7 | 6.2  | 6.2 | 144                                                                                   |
| 152                                                                                 |                                                                                     | 3.4                                                                                          | 3.4  | 4.9  | 4.9  | 5.6      | 5.6 | -                                                                                              | -   | 3.6  | 3.6 | 5.1  | 5.1 | 152                                                                                   |
| 160                                                                                 |                                                                                     | 2.6                                                                                          | 2.6  | 3.9  | 3.9  | 4.8      | 4.8 | -                                                                                              | -   | 2.8  | 2.8 | 4.2  | 4.2 | 160                                                                                   |
| 168                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.9      | 3.9 | -                                                                                              | -   | -    | -   | -    | -   | 168                                                                                   |
| 176                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.0      | 3.0 | -                                                                                              | -   | -    | -   | -    | -   | 176                                                                                   |

# HAV

|  55,100 lb +  33,100 lb |       |  16.4 ft |      |  15.6 ft    |      |  32.2 ft/s |      | 360°    |      | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|---------|------|------------|-----|
|                         |       |  42.3 ft |      |  126.0 ft |      |                                                                                             |      |         |      |            |     |
| 0,3° 1°                                                                                                                                                                                   |       | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                      |      | 0,3° 1°                                                                                     |      | 0,3° 1° |      | 0,3° 1°    |     |
| 0°                                                                                                                                                                                        |       | 18°                                                                                       |      | 36°                                                                                          |      | 0°                                                                                          |      | 18°     |      | 36°        |     |
| ft                                                                                                                                                                                        |       |                                                                                           |      | 1,000 lb                                                                                     |      |                                                                                             |      |         |      |            | ft  |
| 10                                                                                                                                                                                        | 119.2 | 111.6                                                                                     | 89.3 | -                                                                                            | -    | -                                                                                           | -    | -       | -    | -          | 10  |
| 12                                                                                                                                                                                        | 113.1 | 106.0                                                                                     | 86.0 | 82.2                                                                                         | -    | -                                                                                           | -    | -       | -    | -          | 12  |
| 14                                                                                                                                                                                        | 107.3 | 101.1                                                                                     | 83.0 | 79.5                                                                                         | -    | -                                                                                           | -    | -       | -    | -          | 14  |
| 16                                                                                                                                                                                        | 102.0 | 96.4                                                                                      | 80.3 | 77.0                                                                                         | 67.3 | 64.9                                                                                        | -    | -       | -    | -          | 16  |
| 18                                                                                                                                                                                        | 97.4  | 92.4                                                                                      | 77.9 | 74.8                                                                                         | 65.7 | 63.6                                                                                        | -    | -       | -    | -          | 18  |
| 20                                                                                                                                                                                        | 93.1  | 88.6                                                                                      | 75.5 | 72.7                                                                                         | 64.1 | 62.4                                                                                        | -    | -       | -    | -          | 20  |
| 24                                                                                                                                                                                        | 85.9  | 82.2                                                                                      | 71.6 | 69.3                                                                                         | 60.5 | 59.4                                                                                        | -    | -       | -    | -          | 24  |
| 28                                                                                                                                                                                        | 79.8  | 76.7                                                                                      | 67.8 | 65.9                                                                                         | 57.5 | 56.6                                                                                        | 72.3 | 64.3    | -    | -          | 28  |
| 32                                                                                                                                                                                        | 69.3  | 68.6                                                                                      | 63.6 | 62.4                                                                                         | 54.9 | 54.2                                                                                        | 62.1 | 56.3    | 62.9 | -          | 32  |
| 36                                                                                                                                                                                        | 58.6  | 58.6                                                                                      | 57.1 | 56.6                                                                                         | 53.2 | 52.6                                                                                        | 54.5 | 50.3    | 55.9 | 51.5       | 36  |
| 40                                                                                                                                                                                        | 49.2  | 49.2                                                                                      | 50.1 | 50.1                                                                                         | -    | -                                                                                           | 48.2 | 45.5    | 48.8 | 45.3       | 40  |
| 48                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 36.4 | 36.1    | 36.5 | 36.5       | 48  |
| 56                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 29.0 | 29.0    | 29.3 | 29.3       | 56  |
| 64                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 24.0 | 24.0    | 24.4 | 24.4       | 64  |
| 72                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 19.9 | 19.9    | 20.2 | 20.2       | 72  |
| 80                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 16.7 | 16.7    | 17.2 | 17.2       | 80  |
| 88                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 14.0 | 14.0    | 14.4 | 14.4       | 88  |
| 96                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 11.8 | 11.8    | 12.1 | 12.1       | 96  |
| 104                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 9.9  | 9.9     | 10.3 | 10.3       | 104 |
| 112                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 8.5  | 8.5     | 8.7  | 8.7        | 112 |
| 120                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 7.0  | 7.0     | 7.2  | 7.2        | 120 |
| 128                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                            | -    | -                                                                                           | 5.9  | 5.9     | -    | -          | 128 |

|   |      |  181.1 ft |      |  196.9 ft |      |         |      |         |      |         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------|------|---------|------|---------|------|---------|-----|
| 0,3° 1°                                                                                                                                                                 |      | 0,3° 1°                                                                                      |      | 0,3° 1°                                                                                        |      | 0,3° 1° |      | 0,3° 1° |      | 0,3° 1° |     |
| 0°                                                                                                                                                                      |      | 18°                                                                                          |      | 36°                                                                                            |      | 0°      |      | 18°     |      | 36°     |     |
| ft                                                                                                                                                                      |      |                                                                                              |      | 1,000 lb                                                                                       |      |         |      |         |      |         | ft  |
| 48                                                                                                                                                                      | 33.0 | 28.0                                                                                         | -    | -                                                                                              | -    | 26.6    | -    | -       | -    | -       | 48  |
| 56                                                                                                                                                                      | 26.8 | 24.6                                                                                         | 27.6 | 25.8                                                                                           | 28.5 | 24.2    | 24.5 | 22.2    | 25.1 | -       | 56  |
| 64                                                                                                                                                                      | 22.0 | 21.0                                                                                         | 22.0 | 21.7                                                                                           | 22.7 | 22.0    | 20.3 | 19.3    | 21.4 | 20.1    | 64  |
| 72                                                                                                                                                                      | 17.5 | 17.5                                                                                         | 18.4 | 18.4                                                                                           | 18.8 | 18.8    | 16.4 | 15.7    | 17.3 | 16.6    | 72  |
| 80                                                                                                                                                                      | 14.3 | 14.3                                                                                         | 15.0 | 15.0                                                                                           | 15.4 | 15.4    | 13.2 | 12.8    | 14.0 | 13.7    | 80  |
| 88                                                                                                                                                                      | 11.5 | 11.5                                                                                         | 12.2 | 12.2                                                                                           | 12.5 | 12.5    | 10.3 | 10.3    | 11.1 | 11.1    | 88  |
| 96                                                                                                                                                                      | 9.2  | 9.2                                                                                          | 9.8  | 9.8                                                                                            | 10.1 | 10.1    | 8.1  | 8.1     | 8.8  | 8.8     | 96  |
| 104                                                                                                                                                                     | 7.1  | 7.1                                                                                          | 7.7  | 7.7                                                                                            | 8.0  | 8.0     | 6.2  | 6.2     | 6.7  | 6.7     | 104 |
| 112                                                                                                                                                                     | 5.4  | 5.4                                                                                          | 5.9  | 5.9                                                                                            | 6.3  | 6.3     | 4.3  | 4.3     | 5.0  | 5.0     | 112 |
| 120                                                                                                                                                                     | 3.9  | 3.9                                                                                          | 4.3  | 4.3                                                                                            | 4.7  | 4.7     | -    | -       | 3.4  | 3.4     | 120 |
| 128                                                                                                                                                                     | 2.7  | 2.7                                                                                          | 3.1  | 3.1                                                                                            | 3.3  | 3.3     | -    | -       | -    | -       | 128 |



# HAV

|  55,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|----------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                        |  |
|  ft                                                                                                      |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  ft |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                        |  |
| 1,000 lb                                                                                                                                                                                  |                                                                                   |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            |      |                                                                                        |  |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                     |  |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                     |  |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                     |  |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                     |  |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                     |  |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                     |  |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                     |  |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                     |  |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                         | 27.8 | 51.0 | 45.2 | -          | -    | 32                                                                                     |  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 40.1 | 34.9                                                                                      | 33.3 | 27.5                                                                                         | 26.4 | 49.2 | 44.0 | -          | -    | 36                                                                                     |  |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 37.4 | 33.0                                                                                      | 31.5 | 26.0                                                                                         | 24.9 | 46.7 | 42.3 | 37.4       | -    | 40                                                                                     |  |
| 48                                                                                                                                                                                        |                                                                                   | 34.7                                                                                      | 33.2 | 29.1                                                                                      | 28.1 | 23.5                                                                                         | 22.7 | 36.4 | 35.3 | 34.3       | 33.2 | 48                                                                                     |  |
| 56                                                                                                                                                                                        |                                                                                   | 30.8                                                                                      | 29.6 | 26.2                                                                                      | 25.4 | 22.0                                                                                         | 21.4 | 29.2 | 29.1 | 29.9       | 29.6 | 56                                                                                     |  |
| 64                                                                                                                                                                                        |                                                                                   | 26.0                                                                                      | 25.7 | 24.1                                                                                      | 23.5 | -                                                                                            | -    | 23.9 | 23.9 | 24.8       | 24.8 | 64                                                                                     |  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 20.1 | 20.1 | 20.6       | 20.4 | 72                                                                                     |  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.0 | 17.0 | 17.4       | 17.0 | 80                                                                                     |  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 14.5 | 14.5 | 14.7       | 14.6 | 88                                                                                     |  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.5 | 12.5 | 12.8       | 12.8 | 96                                                                                     |  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.6 | 10.6 | 10.9       | 10.9 | 104                                                                                    |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.0  | 9.0  | 9.6        | 9.6  | 112                                                                                    |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.6  | 7.6  | 8.2        | 8.2  | 120                                                                                    |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.4  | 6.4  | 6.8        | 6.8  | 128                                                                                    |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.3  | 5.3  | 5.6        | 5.6  | 136                                                                                    |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.4  | 4.4  | 4.7        | 4.7  | 144                                                                                    |  |

|                                                                                        |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  ft |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                        |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| 1,000 lb                                                                               |                                                                                     |                                                                                              |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                     |                                                                                     | 25.0                                                                                         | 21.4 | -    | -    | -    | -    | 20.6                                                                                           | 17.0 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                     |                                                                                     | 21.4                                                                                         | 19.6 | 19.3 | -    | -    | -    | 19.8                                                                                           | 17.0 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                     |                                                                                     | 18.1                                                                                         | 17.2 | 19.2 | 18.2 | -    | -    | 16.4                                                                                           | 15.5 | 17.9 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                     |                                                                                     | 14.7                                                                                         | 14.4 | 15.8 | 15.6 | 16.9 | 16.6 | 13.0                                                                                           | 12.8 | 14.9 | 14.6 | 15.6 | 15.5 | 80                                                                                    |  |
| 88                                                                                     |                                                                                     | 11.9                                                                                         | 11.9 | 13.4 | 13.4 | 13.9 | 13.9 | 10.2                                                                                           | 10.2 | 12.0 | 12.0 | 13.6 | 13.3 | 88                                                                                    |  |
| 96                                                                                     |                                                                                     | 9.6                                                                                          | 9.6  | 11.0 | 11.0 | 11.9 | 11.9 | 8.1                                                                                            | 8.1  | 9.6  | 9.6  | 10.9 | 10.9 | 96                                                                                    |  |
| 104                                                                                    |                                                                                     | 7.7                                                                                          | 7.7  | 8.9  | 8.9  | 9.9  | 9.9  | 6.2                                                                                            | 6.2  | 7.5  | 7.5  | 8.6  | 8.6  | 104                                                                                   |  |
| 112                                                                                    |                                                                                     | 6.1                                                                                          | 6.1  | 7.2  | 7.2  | 8.1  | 8.1  | 4.6                                                                                            | 4.6  | 5.9  | 5.9  | 7.0  | 7.0  | 112                                                                                   |  |
| 120                                                                                    |                                                                                     | 4.6                                                                                          | 4.6  | 5.6  | 5.6  | 6.2  | 6.2  | 3.3                                                                                            | 3.3  | 4.3  | 4.3  | 5.4  | 5.4  | 120                                                                                   |  |
| 128                                                                                    |                                                                                     | 3.4                                                                                          | 3.4  | 4.2  | 4.2  | 4.7  | 4.7  | -                                                                                              | -    | 3.1  | 3.1  | 4.1  | 4.1  | 128                                                                                   |  |
| 136                                                                                    |                                                                                     | -                                                                                            | -    | 2.9  | 2.9  | 3.5  | 3.5  | -                                                                                              | -    | -    | -    | 2.7  | 2.7  | 136                                                                                   |  |
| 144                                                                                    |                                                                                     | -                                                                                            | -    | -    | -    | 2.5  | 2.5  | -                                                                                              | -    | -    | -    | -    | -    | 144                                                                                   |  |





# HAV

|  55,100 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|  ft                                                                                                      |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| 1,000 lb                                                                                                                                                                                  |                                                                                   |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 49.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 47.3                                                                                      | 41.7 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 45.5                                                                                      | 40.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 43.6                                                                                      | 39.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 40.0                                                                                      | 36.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 36.8                                                                                      | 33.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 34.1                                                                                      | 31.5 | 26.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 31.7                                                                                      | 29.5 | 24.8                                                                                      | 23.6 | -                                                                                            | -    | 33.9 | 28.3 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 29.5                                                                                      | 27.5 | 23.4                                                                                      | 22.3 | -                                                                                            | -    | 32.9 | 27.7 | -          | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 25.8                                                                                      | 24.4 | 21.0                                                                                      | 20.1 | 16.1                                                                                         | 15.5 | 30.8 | 26.3 | -          | -    | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 22.9                                                                                      | 21.7 | 18.9                                                                                      | 17.9 | 14.6                                                                                         | 14.1 | 28.2 | 25.0 | 22.1       | 20.7 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 20.3                                                                                      | 19.2 | 16.9                                                                                      | 16.2 | 13.4                                                                                         | 13.0 | 24.2 | 22.8 | 20.8       | 19.5 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | 18.1                                                                                      | 17.2 | 15.5                                                                                      | 14.8 | 12.6                                                                                         | 12.1 | 19.9 | 19.9 | 19.6       | 18.3 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | 16.3                                                                                      | 15.7 | 14.2                                                                                      | 13.8 | -                                                                                            | -    | 17.2 | 16.5 | 17.7       | 17.0 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 14.4 | 14.4 | 15.4       | 15.4 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.5 | 12.5 | 13.0       | 13.0 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.8 | 10.8 | 11.4       | 11.4 | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.4  | 9.4  | 10.1       | 10.1 | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.3  | 8.3  | 8.7        | 8.7  | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.0  | 7.0  | 7.6        | 7.6  | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.0  | 6.0  | 6.6        | 6.6  | 136                                                                                 |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.9  | 4.9  | 5.6        | 5.6  | 144                                                                                 |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.1  | 4.1  | 4.5        | 4.5  | 152                                                                                 |
| 160                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.3  | 3.3  | 3.7        | 3.7  | 160                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      |      |    | ft                                                                                    |  |
| 56                                                                                  | 19.6                                                                                | 15.7                                                                                         | -    | -    | -    | -    | -    | -                                                                                              | -    | -    | -    | -    | -  | 56                                                                                    |  |
| 64                                                                                  | 19.2                                                                                | 15.7                                                                                         | -    | -    | -    | -    | 15.8 | 12.6                                                                                           | -    | -    | -    | -    | -  | 64                                                                                    |  |
| 72                                                                                  | 17.0                                                                                | 15.7                                                                                         | -    | -    | -    | -    | 15.4 | 12.6                                                                                           | -    | -    | -    | -    | -  | 72                                                                                    |  |
| 80                                                                                  | 14.6                                                                                | 13.9                                                                                         | 15.4 | 15.2 | -    | -    | 12.8 | 12.3                                                                                           | 14.2 | -    | -    | -    | -  | 80                                                                                    |  |
| 88                                                                                  | 12.0                                                                                | 12.0                                                                                         | 13.6 | 13.5 | 12.8 | 12.0 | 10.2 | 10.2                                                                                           | 12.6 | 12.1 | -    | -    | -  | 88                                                                                    |  |
| 96                                                                                  | 9.7                                                                                 | 9.7                                                                                          | 11.5 | 11.5 | 12.3 | 11.8 | 8.1  | 8.1                                                                                            | 10.4 | 10.4 | 11.2 | 11.2 | -  | 96                                                                                    |  |
| 104                                                                                 | 7.7                                                                                 | 7.7                                                                                          | 9.7  | 9.7  | 10.8 | 10.7 | 6.2  | 6.2                                                                                            | 8.4  | 8.4  | 10.1 | 10.1 | -  | 104                                                                                   |  |
| 112                                                                                 | 6.3                                                                                 | 6.3                                                                                          | 7.9  | 7.9  | 9.6  | 9.6  | 4.8  | 4.8                                                                                            | 6.5  | 6.5  | 8.3  | 8.3  | -  | 112                                                                                   |  |
| 120                                                                                 | 4.8                                                                                 | 4.8                                                                                          | 6.5  | 6.5  | 7.8  | 7.8  | 3.5  | 3.5                                                                                            | 5.2  | 5.2  | 6.7  | 6.7  | -  | 120                                                                                   |  |
| 128                                                                                 | 3.7                                                                                 | 3.7                                                                                          | 5.2  | 5.2  | 6.5  | 6.5  | -    | -                                                                                              | 3.9  | 3.9  | 5.3  | 5.3  | -  | 128                                                                                   |  |
| 136                                                                                 | 2.7                                                                                 | 2.7                                                                                          | 4.0  | 4.0  | 5.2  | 5.2  | -    | -                                                                                              | 2.8  | 2.8  | 4.0  | 4.0  | -  | 136                                                                                   |  |
| 144                                                                                 | -                                                                                   | -                                                                                            | 3.1  | 3.1  | 3.8  | 3.8  | -    | -                                                                                              | -    | -    | 2.9  | 2.9  | -  | 144                                                                                   |  |

# HAV

|  55,100 lb +  33,100 lb |                                                                                   |          |  75.5 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |
|                                                                                                          |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                           |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 32.9     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 32.1     | 26.6                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 30.4     | 25.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 28.7     | 24.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 26.8     | 23.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 25.2     | 21.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 23.6     | 20.6                                                                                      | 19.0 | -                                                                                         | -    | -                                                                                            | 22.2 | 19.8 | -    | -          | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 20.9     | 18.5                                                                                      | 16.7 | 15.6                                                                                      | -    | -                                                                                            | 21.2 | 19.0 | -    | -          | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 18.5     | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -    | -                                                                                            | 20.3 | 18.2 | -    | -          | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 16.3     | 15.1                                                                                      | 13.3 | 12.6                                                                                      | 10.1 | 9.9                                                                                          | 19.2 | 17.4 | 15.0 | -          | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | 14.6     | 13.5                                                                                      | 11.9 | 11.5                                                                                      | 9.3  | 9.1                                                                                          | 18.1 | 16.6 | 14.1 | 13.0       | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | 13.0     | 12.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7  | 8.3                                                                                          | 16.6 | 15.5 | 13.3 | 12.3       | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | 11.8     | 11.1                                                                                      | 10.1 | 9.6                                                                                       | 8.1  | 7.8                                                                                          | 14.2 | 14.0 | 12.5 | 11.7       | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | 10.8     | 10.2                                                                                      | 9.3  | 9.0                                                                                       | 7.7  | 7.4                                                                                          | 12.3 | 12.3 | 11.7 | 11.0       | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | 10.0     | 9.4                                                                                       | 8.7  | 8.4                                                                                       | -    | -                                                                                            | 10.6 | 10.6 | 11.1 | 10.4       | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.2  | 9.2  | 9.9  | 9.8        | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.1  | 8.1  | 8.9  | 8.9        | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.9  | 6.9  | 7.6  | 7.6        | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.0  | 6.0  | 6.8  | 6.8        | 136                                                                                 |
| 144                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.1  | 5.1  | 5.8  | 5.8        | 144                                                                                 |
| 152                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.1  | 4.1  | 5.0  | 5.0        | 152                                                                                 |
| 160                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.4  | 3.4  | 4.2  | 4.2        | 160                                                                                 |
| 168                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 3.3  | 3.3        | 168                                                                                 |
| 176                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.5  | 2.5        | 176                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |     |  196.9 ft |     |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |     | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |     |                                                                                                |     |      |     | ft   |     |                                                                                       |  |
| 64                                                                                  |                                                                                     | 14.4                                                                                         | 11.2 | -    | -    | -        | -   | -                                                                                              | -   | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 14.1                                                                                         | 11.2 | -    | -    | -        | -   | 11.7                                                                                           | 8.8 | -    | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 13.0                                                                                         | 11.2 | -    | -    | -        | -   | 11.2                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 11.1                                                                                         | 10.4 | 11.5 | 10.6 | -        | -   | 9.4                                                                                            | 8.6 | -    | -   | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 8.9                                                                                          | 8.9  | 10.8 | 10.2 | -        | -   | 7.4                                                                                            | 7.4 | 10.0 | -   | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 7.3                                                                                          | 7.3  | 9.4  | 9.3  | 8.2      | -   | 5.7                                                                                            | 5.7 | 8.4  | 8.3 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 5.7                                                                                          | 5.7  | 7.9  | 7.9  | 7.9      | 7.5 | 4.1                                                                                            | 4.1 | 6.5  | 6.5 | 7.7  | 7.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 4.4                                                                                          | 4.4  | 6.5  | 6.5  | 7.6      | 7.2 | 2.8                                                                                            | 2.8 | 5.2  | 5.2 | 7.3  | 6.9 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 3.3                                                                                          | 3.3  | 5.2  | 5.2  | 6.8      | 6.7 | -                                                                                              | -   | 4.0  | 4.0 | 5.8  | 5.8 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | -                                                                                            | -    | 4.0  | 4.0  | 5.8      | 5.8 | -                                                                                              | -   | 2.9  | 2.9 | 4.7  | 4.7 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | 3.1  | 3.1  | 4.5      | 4.5 | -                                                                                              | -   | -    | -   | 3.6  | 3.6 | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.6      | 3.6 | -                                                                                              | -   | -    | -   | -    | -   | 152                                                                                   |  |



# HAV

|  33,100 lb +  33,100 lb |  |  16.4 ft |       |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-----|
|                         |  |  42.3 ft |       |                                                                                           |      |  126.0 ft |      |      |      |            |      |     |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°    | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |     |
|                                                                                                                                                                                           |  | 0°                                                                                        |       | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |       |                                                                                           |      |                                                                                              |      |      |      |            |      | ft  |
| 10                                                                                                                                                                                        |  | 119.2                                                                                     | 111.6 | 89.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 10  |
| 12                                                                                                                                                                                        |  | 113.1                                                                                     | 106.0 | 86.0                                                                                      | 82.2 | -                                                                                            | -    | -    | -    | -          | -    | 12  |
| 14                                                                                                                                                                                        |  | 107.3                                                                                     | 101.1 | 83.0                                                                                      | 79.5 | -                                                                                            | -    | -    | -    | -          | -    | 14  |
| 16                                                                                                                                                                                        |  | 102.0                                                                                     | 96.4  | 80.3                                                                                      | 77.0 | 67.3                                                                                         | 64.9 | -    | -    | -          | -    | 16  |
| 18                                                                                                                                                                                        |  | 97.4                                                                                      | 92.4  | 77.9                                                                                      | 74.8 | 65.7                                                                                         | 63.6 | -    | -    | -          | -    | 18  |
| 20                                                                                                                                                                                        |  | 93.1                                                                                      | 88.6  | 75.5                                                                                      | 72.7 | 64.1                                                                                         | 62.4 | -    | -    | -          | -    | 20  |
| 24                                                                                                                                                                                        |  | 84.6                                                                                      | 82.0  | 71.6                                                                                      | 69.3 | 60.5                                                                                         | 59.4 | -    | -    | -          | -    | 24  |
| 28                                                                                                                                                                                        |  | 71.0                                                                                      | 71.0  | 67.8                                                                                      | 65.9 | 57.5                                                                                         | 56.6 | 60.5 | 54.1 | -          | -    | 28  |
| 32                                                                                                                                                                                        |  | 56.9                                                                                      | 56.9  | 58.3                                                                                      | 57.9 | 54.9                                                                                         | 54.2 | 51.9 | 47.7 | 52.4       | 46.7 | 32  |
| 36                                                                                                                                                                                        |  | 47.7                                                                                      | 47.7  | 48.9                                                                                      | 48.9 | 48.4                                                                                         | 48.1 | 45.2 | 42.3 | 46.4       | 42.8 | 36  |
| 40                                                                                                                                                                                        |  | 39.7                                                                                      | 39.7  | 40.8                                                                                      | 40.8 | -                                                                                            | -    | 39.9 | 38.2 | 40.6       | 38.6 | 40  |
| 48                                                                                                                                                                                        |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 30.6 | 30.3 | 31.0       | 30.9 | 48  |
| 56                                                                                                                                                                                        |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 24.1 | 24.1 | 25.0       | 25.0 | 56  |
| 64                                                                                                                                                                                        |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 19.0 | 19.0 | 19.7       | 19.7 | 64  |
| 72                                                                                                                                                                                        |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 15.3 | 15.3 | 16.0       | 16.0 | 72  |
| 80                                                                                                                                                                                        |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 12.4 | 12.4 | 13.0       | 13.0 | 80  |
| 88                                                                                                                                                                                        |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 10.3 | 10.3 | 10.6       | 10.6 | 88  |
| 96                                                                                                                                                                                        |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 8.3  | 8.3  | 8.7        | 8.7  | 96  |
| 104                                                                                                                                                                                       |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 6.6  | 6.6  | 6.8        | 6.8  | 104 |
| 112                                                                                                                                                                                       |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 5.2  | 5.2  | 5.4        | 5.4  | 112 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 3.9  | 3.9  | 4.2        | 4.2  | 120 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 3.0  | 3.0  | -          | -    | 128 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 48                                                                                  |                                                                                     | 26.0                                                                                         | 23.8 | -    | -    | -        | -    | 23.5                                                                                           | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 20.4                                                                                         | 19.1 | 21.5 | 20.2 | 22.5     | 21.1 | 18.2                                                                                           | 17.2 | 19.4 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 16.0                                                                                         | 15.3 | 17.0 | 16.2 | 17.8     | 17.1 | 14.0                                                                                           | 13.5 | 15.1 | 14.4 | 16.0 | 15.3 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 12.4                                                                                         | 12.2 | 13.3 | 13.1 | 14.0     | 13.7 | 10.7                                                                                           | 10.6 | 11.5 | 11.3 | 12.4 | 12.2 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 9.5                                                                                          | 9.5  | 10.4 | 10.4 | 11.0     | 10.9 | 8.0                                                                                            | 8.0  | 8.8  | 8.8  | 9.5  | 9.5  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 7.2                                                                                          | 7.2  | 7.9  | 7.9  | 8.5      | 8.5  | 5.7                                                                                            | 5.7  | 6.3  | 6.3  | 7.0  | 7.0  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 5.3                                                                                          | 5.3  | 5.9  | 5.9  | 6.4      | 6.4  | 3.8                                                                                            | 3.8  | 4.5  | 4.5  | 5.0  | 5.0  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 3.5                                                                                          | 3.5  | 4.2  | 4.2  | 4.4      | 4.4  | -                                                                                              | -    | 2.8  | 2.8  | 3.3  | 3.3  | 104                                                                                   |  |



# HAV

|  33,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                         | 27.8 | 49.0 | 42.9 | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 40.1 | 34.9                                                                                      | 33.3 | 27.5                                                                                         | 26.4 | 44.1 | 39.9 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 39.0                                                                                      | 37.4 | 33.0                                                                                      | 31.5 | 26.0                                                                                         | 24.9 | 38.7 | 36.2 | 37.3       | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 32.4                                                                                      | 32.2 | 29.1                                                                                      | 28.1 | 23.5                                                                                         | 22.7 | 30.8 | 29.4 | 32.1       | 30.6 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 25.5                                                                                      | 25.5 | 25.7                                                                                      | 25.3 | 22.0                                                                                         | 21.4 | 24.5 | 24.3 | 25.4       | 24.6 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 20.5                                                                                      | 20.5 | 21.3                                                                                      | 21.3 | -                                                                                            | -    | 19.9 | 19.9 | 20.4       | 20.3 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.2 | 16.2 | 17.2       | 17.2 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.3 | 13.3 | 14.2       | 14.2 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.0 | 11.0 | 11.8       | 11.8 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.1  | 9.1  | 9.8        | 9.8  | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.3  | 7.3  | 8.1        | 8.1  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.9  | 5.9  | 6.5        | 6.5  | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.6  | 4.6  | 5.2        | 5.2  | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.5  | 3.5  | 4.0        | 4.0  | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 2.6  | 2.6  | 3.0        | 3.0  | 136                                                                                 |

|  |  |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |     |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|-----|---------------------------------------------------------------------------------------|
|                                                                                     |                                                                                     | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°  |                                                                                       |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |     |                                                                                       |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |     |                                                                                       |
| 48                                                                                  | 23.3                                                                                | -                                                                                            | -    | -    | -    | -    | -    | -                                                                                              | -    | -    | -    | 48   |     |                                                                                       |
| 56                                                                                  | 20.3                                                                                | 18.7                                                                                         | -    | -    | -    | -    | 18.3 | 16.0                                                                                           | -    | -    | -    | 56   |     |                                                                                       |
| 64                                                                                  | 16.0                                                                                | 15.0                                                                                         | 18.2 | -    | -    | -    | 14.0 | 13.2                                                                                           | -    | -    | -    | 64   |     |                                                                                       |
| 72                                                                                  | 12.4                                                                                | 12.2                                                                                         | 14.4 | 13.7 | 16.1 | -    | 10.4 | 10.4                                                                                           | 12.6 | -    | -    | 72   |     |                                                                                       |
| 80                                                                                  | 9.5                                                                                 | 9.5                                                                                          | 11.3 | 11.3 | 12.8 | 12.6 | 7.8  | 7.8                                                                                            | 9.7  | 9.7  | 11.5 | 11.3 | 80  |                                                                                       |
| 88                                                                                  | 7.2                                                                                 | 7.2                                                                                          | 8.8  | 8.8  | 10.2 | 10.2 | 5.5  | 5.5                                                                                            | 7.2  | 7.2  | 8.9  | 8.9  | 88  |                                                                                       |
| 96                                                                                  | 5.3                                                                                 | 5.3                                                                                          | 6.7  | 6.7  | 7.9  | 7.9  | 3.8  | 3.8                                                                                            | 5.2  | 5.2  | 6.6  | 6.6  | 96  |                                                                                       |
| 104                                                                                 | 3.7                                                                                 | 3.7                                                                                          | 5.0  | 5.0  | 6.2  | 6.2  | -    | -                                                                                              | 3.5  | 3.5  | 4.8  | 4.8  | 104 |                                                                                       |
| 112                                                                                 | -                                                                                   | -                                                                                            | 3.5  | 3.5  | 4.6  | 4.6  | -    | -                                                                                              | -    | -    | 3.2  | 3.2  | 112 |                                                                                       |
| 120                                                                                 | -                                                                                   | -                                                                                            | -    | -    | 3.2  | 3.2  | -    | -                                                                                              | -    | -    | -    | -    | 120 |                                                                                       |

# HAV

|  33,100 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|  ft                                                                                                      |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| 1,000 lb                                                                                                                                                                                  |                                                                                   |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 49.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 47.3                                                                                      | 41.7 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 45.5                                                                                      | 40.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 43.6                                                                                      | 39.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 40.0                                                                                      | 36.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 36.8                                                                                      | 33.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 34.1                                                                                      | 31.5 | 26.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 31.7                                                                                      | 29.5 | 24.8                                                                                      | 23.6 | -                                                                                            | -    | 33.9 | 28.3 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 29.5                                                                                      | 27.5 | 23.4                                                                                      | 22.3 | -                                                                                            | -    | 32.8 | 27.7 | -          | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 25.8                                                                                      | 24.4 | 21.0                                                                                      | 20.1 | 16.1                                                                                         | 15.5 | 29.5 | 25.7 | -          | -    | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 22.9                                                                                      | 21.7 | 18.9                                                                                      | 17.9 | 14.6                                                                                         | 14.1 | 24.7 | 22.7 | 22.1       | 20.7 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 20.3                                                                                      | 19.2 | 16.9                                                                                      | 16.2 | 13.4                                                                                         | 13.0 | 19.7 | 19.3 | 20.6       | 19.4 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | 18.1                                                                                      | 17.2 | 15.5                                                                                      | 14.8 | 12.6                                                                                         | 12.1 | 16.6 | 16.6 | 17.5       | 17.4 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | 15.5                                                                                      | 15.5 | 14.2                                                                                      | 13.8 | -                                                                                            | -    | 13.9 | 13.9 | 14.6       | 14.6 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.6 | 11.6 | 12.7       | 12.7 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.6  | 9.6  | 10.9       | 10.9 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.1  | 8.1  | 9.1        | 9.1  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.5  | 6.5  | 7.6        | 7.6  | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.3  | 5.3  | 6.3        | 6.3  | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.2  | 4.2  | 5.1        | 5.1  | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.3  | 3.3  | 4.0        | 4.0  | 136                                                                                 |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 2.5  | 2.5  | 2.9        | 2.9  | 144                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |          |      |      |      |      |  196.9 ft |      |      |     |      |     |                                                                                       |    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|-----|---------------------------------------------------------------------------------------|----|
|  |  | 0,3°                                                                                         | 1°       | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°  |  |    |
|                                                                                     |                                                                                     | 0°                                                                                           |          | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |     | 36°  |     |                                                                                       |    |
| ft                                                                                  |                                                                                     |                                                                                              | 1,000 lb |      |      |      |      |                                                                                                |      |      |     |      |     |                                                                                       | ft |
| 56                                                                                  |                                                                                     | 18.7                                                                                         | 15.7     | -    | -    | -    | -    | -                                                                                              | -    | -    | -   | -    | -   | 56                                                                                    |    |
| 64                                                                                  |                                                                                     | 15.6                                                                                         | 14.5     | -    | -    | -    | -    | 13.8                                                                                           | 12.6 | -    | -   | -    | -   | 64                                                                                    |    |
| 72                                                                                  |                                                                                     | 12.2                                                                                         | 12.2     | -    | -    | -    | -    | 10.4                                                                                           | 10.4 | -    | -   | -    | -   | 72                                                                                    |    |
| 80                                                                                  |                                                                                     | 9.4                                                                                          | 9.4      | 12.1 | 12.0 | -    | -    | 7.8                                                                                            | 7.8  | 10.6 | -   | -    | -   | 80                                                                                    |    |
| 88                                                                                  |                                                                                     | 7.2                                                                                          | 7.2      | 9.5  | 9.5  | 11.5 | 11.5 | 5.5                                                                                            | 5.5  | 8.1  | 8.1 | -    | -   | 88                                                                                    |    |
| 96                                                                                  |                                                                                     | 5.3                                                                                          | 5.3      | 7.4  | 7.4  | 9.5  | 9.5  | 3.8                                                                                            | 3.8  | 6.1  | 6.1 | 8.1  | 8.1 | 96                                                                                    |    |
| 104                                                                                 |                                                                                     | 3.9                                                                                          | 3.9      | 5.7  | 5.7  | 7.5  | 7.5  | -                                                                                              | -    | 4.4  | 4.4 | 6.4  | 6.4 | 104                                                                                   |    |
| 112                                                                                 |                                                                                     | -                                                                                            | -        | 4.3  | 4.3  | 5.9  | 5.9  | -                                                                                              | -    | -    | -   | 4.8  | 4.8 | 112                                                                                   |    |
| 120                                                                                 |                                                                                     | -                                                                                            | -        | 3.1  | 3.1  | 4.5  | 4.5  | -                                                                                              | -    | -    | -   | 3.3  | 3.3 | 120                                                                                   |    |
| 128                                                                                 |                                                                                     | -                                                                                            | -        | -    | -    | 3.3  | 3.3  | -                                                                                              | -    | -    | -   | -    | -   | 128                                                                                   |    |



# HAV

|  33,100 lb +  33,100 lb |      |  75.5 ft    |      |  15.6 ft |      |  32.2 ft/s |      | 360°                                                                                        |      | ASME B30.5                                                                                  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|-----|
|  42.3 ft                                                                                                 |      |  126.0 ft |      |                                                                                           |      |                                                                                             |      |                                                                                             |      |                                                                                             |     |
|  0,3° 1°                                                                                                 |      |  0,3° 1°    |      |  0,3° 1° |      |  0,3° 1°   |      |  0,3° 1° |      |  0,3° 1° |     |
|  0°                                                                                                      |      |  18°        |      |  36°     |      |  0°        |      |  18°     |      |  36°     |     |
| ft                                                                                                                                                                                        |      |                                                                                              |      | 1,000 lb                                                                                  |      |                                                                                             |      |                                                                                             |      |                                                                                             | ft  |
| 18                                                                                                                                                                                        | 32.9 | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                           | 18  |
| 20                                                                                                                                                                                        | 32.1 | 26.6                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                           | 20  |
| 24                                                                                                                                                                                        | 30.4 | 25.4                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                           | 24  |
| 28                                                                                                                                                                                        | 28.7 | 24.2                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                           | 28  |
| 32                                                                                                                                                                                        | 26.8 | 23.0                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                           | 32  |
| 36                                                                                                                                                                                        | 25.2 | 21.7                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                           | 36  |
| 40                                                                                                                                                                                        | 23.6 | 20.6                                                                                         | 19.0 | -                                                                                         | -    | 22.2                                                                                        | 19.8 | -                                                                                           | -    | -                                                                                           | 40  |
| 48                                                                                                                                                                                        | 20.9 | 18.5                                                                                         | 16.7 | 15.6                                                                                      | -    | 21.2                                                                                        | 19.0 | -                                                                                           | -    | -                                                                                           | 48  |
| 56                                                                                                                                                                                        | 18.5 | 16.7                                                                                         | 14.8 | 14.0                                                                                      | -    | 20.3                                                                                        | 18.2 | -                                                                                           | -    | -                                                                                           | 56  |
| 64                                                                                                                                                                                        | 16.3 | 15.1                                                                                         | 13.3 | 12.6                                                                                      | 10.1 | 18.5                                                                                        | 17.1 | 15.0                                                                                        | -    | -                                                                                           | 64  |
| 72                                                                                                                                                                                        | 14.6 | 13.5                                                                                         | 11.9 | 11.5                                                                                      | 9.3  | 15.9                                                                                        | 15.7 | 14.1                                                                                        | 13.0 | -                                                                                           | 72  |
| 80                                                                                                                                                                                        | 13.0 | 12.2                                                                                         | 10.9 | 10.5                                                                                      | 8.7  | 13.6                                                                                        | 13.6 | 13.3                                                                                        | 12.3 | 9.6                                                                                         | 80  |
| 88                                                                                                                                                                                        | 11.8 | 11.1                                                                                         | 10.1 | 9.6                                                                                       | 8.1  | 11.6                                                                                        | 11.6 | 12.2                                                                                        | 11.5 | 9.2                                                                                         | 88  |
| 96                                                                                                                                                                                        | 10.8 | 10.2                                                                                         | 9.3  | 9.0                                                                                       | 7.7  | 9.7                                                                                         | 9.7  | 10.7                                                                                        | 10.5 | 8.8                                                                                         | 96  |
| 104                                                                                                                                                                                       | 10.0 | 9.4                                                                                          | 8.7  | 8.4                                                                                       | -    | 8.1                                                                                         | 8.1  | 9.6                                                                                         | 9.5  | 8.4                                                                                         | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                            | -    | -                                                                                         | -    | 6.8                                                                                         | 6.8  | 8.1                                                                                         | 8.1  | 8.1                                                                                         | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                            | -    | -                                                                                         | -    | 5.5                                                                                         | 5.5  | 6.8                                                                                         | 6.8  | 7.5                                                                                         | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                            | -    | -                                                                                         | -    | 4.4                                                                                         | 4.4  | 5.6                                                                                         | 5.6  | 6.6                                                                                         | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                            | -    | -                                                                                         | -    | 3.5                                                                                         | 3.5  | 4.4                                                                                         | 4.4  | 5.4                                                                                         | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                            | -    | -                                                                                         | -    | 2.5                                                                                         | 2.5  | 3.6                                                                                         | 3.6  | 4.2                                                                                         | 144 |
| 152                                                                                                                                                                                       | -    | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                           | -    | 3.2                                                                                         | 152 |

|  181.1 ft |      |  196.9 ft |     |                                                                                             |     |                                                                                             |     |                                                                                               |   |                                                                                               |     |
|----------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------|-----|
|  0,3° 1°  |      |  0,3° 1°    |     |  0,3° 1° |     |  0,3° 1° |     |  0,3° 1° |   |  0,3° 1° |     |
|  0°       |      |  18°        |     |  36°     |     |  0°      |     |  18°     |   |  36°     |     |
| ft                                                                                           |      |                                                                                                |     | 1,000 lb                                                                                    |     |                                                                                             |     |                                                                                               |   |                                                                                               | ft  |
| 64                                                                                           | 13.4 | 11.2                                                                                           | -   | -                                                                                           | -   | -                                                                                           | -   | -                                                                                             | - | -                                                                                             | 64  |
| 72                                                                                           | 11.3 | 10.8                                                                                           | -   | -                                                                                           | -   | 9.3                                                                                         | 8.8 | -                                                                                             | - | -                                                                                             | 72  |
| 80                                                                                           | 8.7  | 8.7                                                                                            | -   | -                                                                                           | -   | 6.7                                                                                         | 6.7 | -                                                                                             | - | -                                                                                             | 80  |
| 88                                                                                           | 6.4  | 6.4                                                                                            | 9.5 | 9.5                                                                                         | -   | 4.7                                                                                         | 4.7 | -                                                                                             | - | -                                                                                             | 88  |
| 96                                                                                           | 4.7  | 4.7                                                                                            | 7.4 | 7.4                                                                                         | -   | 3.1                                                                                         | 3.1 | 6.1                                                                                           | - | -                                                                                             | 96  |
| 104                                                                                          | 3.3  | 3.3                                                                                            | 5.7 | 5.7                                                                                         | 8.0 | -                                                                                           | -   | 4.4                                                                                           | - | -                                                                                             | 104 |
| 112                                                                                          | -    | -                                                                                              | 4.3 | 4.3                                                                                         | 6.5 | 6.5                                                                                         | -   | -                                                                                             | - | 5.4                                                                                           | 112 |
| 120                                                                                          | -    | -                                                                                              | 3.1 | 3.1                                                                                         | 5.0 | 5.0                                                                                         | -   | -                                                                                             | - | 3.9                                                                                           | 120 |
| 128                                                                                          | -    | -                                                                                              | -   | -                                                                                           | 3.9 | 3.9                                                                                         | -   | -                                                                                             | - | 2.7                                                                                           | 128 |
| 136                                                                                          | -    | -                                                                                              | -   | -                                                                                           | 2.7 | 2.7                                                                                         | -   | -                                                                                             | - | -                                                                                             | 136 |



# HAV

|  11,000 lb +  33,100 lb |             |  16.4 ft |           |  15.6 ft |           |  32.2 ft/s  |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |             |  42.3 ft |           |                                                                                           |           |  126.0 ft |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |             | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |             | 18°                                                                                       | 36°       | 0°                                                                                        | 18°       | 36°                                                                                          | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |             |                                                                                           |           | 1,000 lb                                                                                  |           |                                                                                              |         |         |         | ft         |     |
| 10                                                                                                                                                                                        | 119.2 111.6 | 89.3 -                                                                                    | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 10  |
| 12                                                                                                                                                                                        | 113.1 106.0 | 86.0 82.2                                                                                 | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 12  |
| 14                                                                                                                                                                                        | 107.3 101.1 | 83.0 79.5                                                                                 | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 14  |
| 16                                                                                                                                                                                        | 102.0 96.4  | 80.3 77.0                                                                                 | 67.3 64.9 | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 16  |
| 18                                                                                                                                                                                        | 97.4 92.4   | 77.9 74.8                                                                                 | 65.7 63.6 | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 18  |
| 20                                                                                                                                                                                        | 92.2 88.0   | 75.5 72.7                                                                                 | 64.1 62.4 | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 20  |
| 24                                                                                                                                                                                        | 72.5 72.5   | 69.8 68.1                                                                                 | 60.5 59.4 | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 24  |
| 28                                                                                                                                                                                        | 55.5 55.5   | 57.6 57.6                                                                                 | 55.9 55.5 | 49.1 44.5                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 28  |
| 32                                                                                                                                                                                        | 44.1 44.1   | 45.8 45.8                                                                                 | 46.9 46.9 | 42.7 38.4                                                                                 | 42.8 37.1 | - -                                                                                          | - -     | - -     | - -     | - -        | 32  |
| 36                                                                                                                                                                                        | 36.7 36.7   | 38.0 38.0                                                                                 | 38.9 38.9 | 37.2 33.6                                                                                 | 37.7 35.2 | 38.6 33.8                                                                                    | - -     | - -     | - -     | - -        | 36  |
| 40                                                                                                                                                                                        | 30.4 30.4   | 31.2 31.2                                                                                 | - -       | 31.9 29.2                                                                                 | 33.2 30.8 | 34.1 31.8                                                                                    | - -     | - -     | - -     | - -        | 40  |
| 48                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 23.5 22.9                                                                                 | 24.5 24.0 | 25.3 24.9                                                                                    | - -     | - -     | - -     | - -        | 48  |
| 56                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 17.7 17.7                                                                                 | 18.6 18.6 | 19.1 19.1                                                                                    | - -     | - -     | - -     | - -        | 56  |
| 64                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 13.7 13.7                                                                                 | 14.3 14.3 | 14.9 14.9                                                                                    | - -     | - -     | - -     | - -        | 64  |
| 72                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 10.6 10.6                                                                                 | 11.1 11.1 | 11.5 11.5                                                                                    | - -     | - -     | - -     | - -        | 72  |
| 80                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 8.3 8.3                                                                                   | 8.7 8.7   | 9.1 9.1                                                                                      | - -     | - -     | - -     | - -        | 80  |
| 88                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 6.2 6.2                                                                                   | 6.6 6.6   | 6.9 6.9                                                                                      | - -     | - -     | - -     | - -        | 88  |
| 96                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 4.5 4.5                                                                                   | 4.9 4.9   | 5.1 5.1                                                                                      | - -     | - -     | - -     | - -        | 96  |
| 104                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 3.0 3.0                                                                                   | 3.3 3.3   | 3.5 3.5                                                                                      | - -     | - -     | - -     | - -        | 104 |

|   |           |  181.1 ft |           |           |         |  196.9 ft |         |         |         |     |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|-----|----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°   | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |    |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°        | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |     |    |
| ft                                                                                                                                                                      |           |                                                                                              |           | 1,000 lb  |         |                                                                                                |         |         |         | ft  |    |
| 48                                                                                                                                                                      | 17.5 16.4 | - -                                                                                          | - -       | 15.4 -    | - -     | - -                                                                                            | - -     | - -     | - -     | - - | 48 |
| 56                                                                                                                                                                      | 13.0 12.6 | 14.1 13.6                                                                                    | 15.1 14.4 | 11.0 10.7 | 12.2 -  | - -                                                                                            | - -     | - -     | - -     | - - | 56 |
| 64                                                                                                                                                                      | 9.5 9.4   | 10.4 10.3                                                                                    | 11.3 11.0 | 7.7 7.7   | 8.6 8.6 | 9.5 9.5                                                                                        | - -     | - -     | - -     | - - | 64 |
| 72                                                                                                                                                                      | 6.7 6.7   | 7.6 7.6                                                                                      | 8.2 8.2   | 4.9 4.9   | 5.8 5.8 | 6.7 6.7                                                                                        | - -     | - -     | - -     | - - | 72 |
| 80                                                                                                                                                                      | 4.3 4.3   | 5.2 5.2                                                                                      | 5.8 5.8   | - -       | 3.6 3.6 | 4.3 4.3                                                                                        | - -     | - -     | - -     | - - | 80 |
| 88                                                                                                                                                                      | - -       | 3.2 3.2                                                                                      | 3.8 3.8   | - -       | - -     | - -                                                                                            | - -     | - -     | - -     | - - | 88 |



# HAV

|  11,000 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                         | 27.8 | 40.2 | 34.1 | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 39.4                                                                                      | 38.3 | 34.9                                                                                      | 33.3 | 27.5                                                                                         | 26.4 | 35.7 | 32.3 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 33.2                                                                                      | 33.2 | 32.8                                                                                      | 31.4 | 26.0                                                                                         | 24.9 | 31.6 | 28.6 | 30.5       | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 24.8                                                                                      | 24.8 | 26.4                                                                                      | 26.4 | 23.5                                                                                         | 22.7 | 24.3 | 22.6 | 25.4       | 24.1 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 19.2                                                                                      | 19.2 | 20.2                                                                                      | 20.2 | 20.6                                                                                         | 20.3 | 18.6 | 18.1 | 20.2       | 19.9 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 15.3                                                                                      | 15.3 | 15.8                                                                                      | 15.8 | -                                                                                            | -    | 14.4 | 14.4 | 15.8       | 15.8 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.3 | 11.3 | 12.4       | 12.4 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.9  | 8.9  | 10.0       | 10.0 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.9  | 6.9  | 8.0        | 8.0  | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.1  | 5.1  | 6.1        | 6.1  | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.7  | 3.7  | 4.6        | 4.6  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | 3.2        | 3.2  | 112                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |    |  196.9 ft |      |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|----|------------------------------------------------------------------------------------------------|------|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1° | 0,3°                                                                                           | 1°   | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |    | 0°                                                                                             |      | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |    |                                                                                                |      |      |    | ft   |    |                                                                                       |  |
| 48                                                                                  | 17.6                                                                                | -                                                                                            | -    | -    | -    | -    | -  | -                                                                                              | -    | -    | -  | -    | -  | 48                                                                                    |  |
| 56                                                                                  | 13.2                                                                                | 12.3                                                                                         | -    | -    | -    | -    | -  | 11.1                                                                                           | 10.5 | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                  | 9.5                                                                                 | 9.4                                                                                          | 11.7 | -    | -    | -    | -  | 7.5                                                                                            | 7.4  | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  | 6.5                                                                                 | 6.5                                                                                          | 8.4  | 8.4  | 10.4 | -    | -  | 4.7                                                                                            | 4.7  | 6.9  | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                  | 4.3                                                                                 | 4.3                                                                                          | 6.1  | 6.1  | 7.6  | 7.6  | -  | -                                                                                              | -    | 4.5  | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                  | -                                                                                   | -                                                                                            | 4.1  | 4.1  | 5.5  | 5.5  | -  | -                                                                                              | -    | -    | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                  | -                                                                                   | -                                                                                            | -    | -    | 3.7  | 3.7  | -  | -                                                                                              | -    | -    | -  | -    | -  | 96                                                                                    |  |



# HAV

|  11,000 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 49.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 47.3                                                                                      | 41.7 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 45.5                                                                                      | 40.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 43.6                                                                                      | 39.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 40.0                                                                                      | 36.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 36.8                                                                                      | 33.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 34.1                                                                                      | 31.5 | 26.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 31.7                                                                                      | 29.5 | 24.8                                                                                      | 23.6 | -                                                                                            | -    | 31.5 | 26.5 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 29.5                                                                                      | 27.5 | 23.4                                                                                      | 22.3 | -                                                                                            | -    | 29.7 | 26.0 | -          | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 25.5                                                                                      | 24.4 | 21.0                                                                                      | 20.1 | 16.1                                                                                         | 15.5 | 24.0 | 22.2 | -          | -    | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 20.8                                                                                      | 20.8 | 18.9                                                                                      | 17.9 | 14.6                                                                                         | 14.1 | 19.3 | 18.0 | 20.4       | 18.8 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 16.6                                                                                      | 16.6 | 16.9                                                                                      | 16.2 | 13.4                                                                                         | 13.0 | 15.1 | 14.5 | 16.8       | 16.6 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | 13.5                                                                                      | 13.5 | 14.6                                                                                      | 14.6 | 12.6                                                                                         | 12.1 | 12.0 | 12.0 | 13.7       | 13.7 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | 11.2                                                                                      | 11.2 | 12.0                                                                                      | 12.0 | -                                                                                            | -    | 9.4  | 9.4  | 11.1       | 11.1 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.5  | 7.5  | 9.1        | 9.1  | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.9  | 5.9  | 7.3        | 7.3  | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.6  | 4.6  | 5.7        | 5.7  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.2  | 3.2  | 4.3        | 4.3  | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | 3.3        | 3.3  | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 128                                                                                 |

|                                                                                     |                                                                                     |         |  181.1 ft |         |     |          |     |         |  196.9 ft |         |   |         |   |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|---------|-----|----------|-----|---------|------------------------------------------------------------------------------------------------|---------|---|---------|---|---------------------------------------------------------------------------------------|
|  |  | 0,3° 1° |                                                                                              | 0,3° 1° |     | 0,3° 1°  |     | 0,3° 1° |                                                                                                | 0,3° 1° |   | 0,3° 1° |   |  |
|                                                                                     |                                                                                     | 0°      |                                                                                              | 18°     |     | 36°      |     | 0°      |                                                                                                | 18°     |   | 36°     |   |                                                                                       |
| ft                                                                                  |                                                                                     |         |                                                                                              |         |     | 1,000 lb |     |         |                                                                                                |         |   | ft      |   |                                                                                       |
| 56                                                                                  |                                                                                     | 12.9    | 12.3                                                                                         | -       | -   | -        | -   | -       | -                                                                                              | -       | - | -       | - | 56                                                                                    |
| 64                                                                                  |                                                                                     | 9.3     | 9.2                                                                                          | -       | -   | -        | -   | 7.3     | 7.3                                                                                            | -       | - | -       | - | 64                                                                                    |
| 72                                                                                  |                                                                                     | 6.5     | 6.5                                                                                          | -       | -   | -        | -   | 4.5     | 4.5                                                                                            | -       | - | -       | - | 72                                                                                    |
| 80                                                                                  |                                                                                     | 4.3     | 4.3                                                                                          | 6.9     | 6.9 | -        | -   | -       | -                                                                                              | -       | - | -       | - | 80                                                                                    |
| 88                                                                                  |                                                                                     | -       | -                                                                                            | 4.9     | 4.9 | 7.1      | 7.1 | -       | -                                                                                              | -       | - | -       | - | 88                                                                                    |
| 96                                                                                  |                                                                                     | -       | -                                                                                            | 3.1     | 3.1 | 5.2      | 5.2 | -       | -                                                                                              | -       | - | -       | - | 96                                                                                    |
| 104                                                                                 |                                                                                     | -       | -                                                                                            | -       | -   | 3.5      | 3.5 | -       | -                                                                                              | -       | - | -       | - | 104                                                                                   |

# HAV

|  11,000 lb +  33,100 lb |           |  75.5 ft |          |  15.6 ft |           |  32.2 ft/s  |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |           |  42.3 ft |          |                                                                                           |           |  126.0 ft |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |           | 0,3° 1°                                                                                   | 0,3° 1°  | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |           | 18°                                                                                       | 36°      | 0°                                                                                        | 18°       | 36°                                                                                          | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |           |                                                                                           |          | 1,000 lb                                                                                  |           |                                                                                              |         |         |         | ft         |     |
| 18                                                                                                                                                                                        | 32.9 -    | - -                                                                                       | - -      | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 18         | 18  |
| 20                                                                                                                                                                                        | 32.1 26.6 | - -                                                                                       | - -      | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 20         | 20  |
| 24                                                                                                                                                                                        | 30.4 25.4 | - -                                                                                       | - -      | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 24         | 24  |
| 28                                                                                                                                                                                        | 28.7 24.2 | - -                                                                                       | - -      | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 28         | 28  |
| 32                                                                                                                                                                                        | 26.8 23.0 | - -                                                                                       | - -      | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 32         | 32  |
| 36                                                                                                                                                                                        | 25.2 21.7 | - -                                                                                       | - -      | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 36         | 36  |
| 40                                                                                                                                                                                        | 23.6 20.6 | 19.0 -                                                                                    | - -      | 22.2 19.8                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | 40         | 40  |
| 48                                                                                                                                                                                        | 20.9 18.5 | 16.7 15.6                                                                                 | - -      | 20.3 18.2                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | 48         | 48  |
| 56                                                                                                                                                                                        | 18.5 16.7 | 14.8 14.0                                                                                 | - -      | 17.6 16.5                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | 56         | 56  |
| 64                                                                                                                                                                                        | 16.3 15.1 | 13.3 12.6                                                                                 | 10.1 9.9 | 14.4 14.3                                                                                 | 14.8 -    | - -                                                                                          | - -     | - -     | - -     | 64         | 64  |
| 72                                                                                                                                                                                        | 14.2 13.5 | 11.9 11.5                                                                                 | 9.3 9.1  | 11.3 11.3                                                                                 | 13.3 12.8 | - -                                                                                          | - -     | - -     | - -     | 72         | 72  |
| 80                                                                                                                                                                                        | 11.8 11.8 | 10.9 10.5                                                                                 | 8.7 8.3  | 8.9 8.9                                                                                   | 11.5 11.5 | 9.6 9.2                                                                                      | 9.6 9.2 | 9.2 8.7 | 9.2 8.7 | 80         | 80  |
| 88                                                                                                                                                                                        | 9.9 9.9   | 10.1 9.6                                                                                  | 8.1 7.8  | 7.0 7.0                                                                                   | 9.3 9.3   | 8.7 8.2                                                                                      | 8.7 8.2 | 8.2 7.6 | 8.2 7.6 | 88         | 88  |
| 96                                                                                                                                                                                        | 8.3 8.3   | 9.0 8.8                                                                                   | 7.7 7.4  | 5.5 5.5                                                                                   | 7.5 7.5   | 6.3 6.3                                                                                      | 6.3 6.3 | 5.0 5.0 | 5.0 5.0 | 96         | 96  |
| 104                                                                                                                                                                                       | 7.2 7.2   | 7.7 7.7                                                                                   | - -      | 4.1 4.1                                                                                   | 5.9 5.9   | 4.8 4.8                                                                                      | 4.8 4.8 | 3.7 3.7 | 3.7 3.7 | 104        | 104 |
| 112                                                                                                                                                                                       | - -       | - -                                                                                       | - -      | 3.0 3.0                                                                                   | 4.8 4.8   | 3.7 3.7                                                                                      | 3.7 3.7 | 2.8 2.8 | 2.8 2.8 | 112        | 112 |
| 120                                                                                                                                                                                       | - -       | - -                                                                                       | - -      | - -                                                                                       | 3.7 3.7   | 2.8 2.8                                                                                      | 2.8 2.8 | 2.7 2.7 | 2.7 2.7 | 120        | 120 |
| 128                                                                                                                                                                                       | - -       | - -                                                                                       | - -      | - -                                                                                       | 2.8 2.8   | 2.7 2.7                                                                                      | 2.7 2.7 | - -     | - -     | 128        | 128 |
| 136                                                                                                                                                                                       | - -       | - -                                                                                       | - -      | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 136        | 136 |

|   |         |  181.1 ft |         |          |         |  196.9 ft |         |         |         |    |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|---------|----------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|----|----|
| 0,3° 1°                                                                                                                                                                 |         | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1°  | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |    |    |
| 0°                                                                                                                                                                      |         | 18°                                                                                          | 36°     | 0°       | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |    |    |
| ft                                                                                                                                                                      |         |                                                                                              |         | 1,000 lb |         |                                                                                                |         |         |         | ft |    |
| 64                                                                                                                                                                      | 8.1 8.1 | - -                                                                                          | - -     | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | 64 | 64 |
| 72                                                                                                                                                                      | 5.4 5.4 | - -                                                                                          | - -     | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | 72 | 72 |
| 80                                                                                                                                                                      | 3.5 3.5 | - -                                                                                          | - -     | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | 80 | 80 |

# HAV

|  0 lb + 33,100 lb |                                                                                   |          |  16.4 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                    |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |
|                   |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                    |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                 |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft                                                                                  |
| 10                                                                                                 |                                                                                   | 119.2    | 111.6                                                                                     | 89.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |
| 12                                                                                                 |                                                                                   | 113.1    | 106.0                                                                                     | 86.0 | 82.2                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |
| 14                                                                                                 |                                                                                   | 107.3    | 101.1                                                                                     | 83.0 | 79.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                 |                                                                                   | 102.0    | 96.4                                                                                      | 80.3 | 77.0                                                                                      | 67.3 | 64.9                                                                                         | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                 |                                                                                   | 95.6     | 89.9                                                                                      | 77.9 | 74.8                                                                                      | 65.7 | 63.6                                                                                         | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                 |                                                                                   | 87.8     | 82.4                                                                                      | 75.3 | 72.7                                                                                      | 64.1 | 62.4                                                                                         | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                 |                                                                                   | 63.2     | 63.2                                                                                      | 65.8 | 65.5                                                                                      | 60.1 | 59.4                                                                                         | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                 |                                                                                   | 48.1     | 48.1                                                                                      | 50.0 | 50.0                                                                                      | 51.8 | 51.8                                                                                         | 42.9 | 38.0 | -    | -          | 28                                                                                  |
| 32                                                                                                 |                                                                                   | 37.9     | 37.9                                                                                      | 39.4 | 39.4                                                                                      | 40.8 | 40.8                                                                                         | 36.5 | 32.6 | 38.3 | 31.2       | 32                                                                                  |
| 36                                                                                                 |                                                                                   | 31.3     | 31.3                                                                                      | 32.4 | 32.4                                                                                      | 33.4 | 33.4                                                                                         | 31.4 | 28.3 | 33.1 | 29.7       | 36                                                                                  |
| 40                                                                                                 |                                                                                   | 25.6     | 25.6                                                                                      | 26.5 | 26.5                                                                                      | -    | -                                                                                            | 26.7 | 24.4 | 28.2 | 25.7       | 40                                                                                  |
| 48                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 19.7 | 18.9 | 20.7 | 19.9       | 48                                                                                  |
| 56                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.6 | 14.5 | 15.4 | 15.3       | 56                                                                                  |
| 64                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.0 | 11.0 | 11.7 | 11.7       | 64                                                                                  |
| 72                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.2  | 8.2  | 8.9  | 8.9        | 72                                                                                  |
| 80                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.9  | 5.9  | 6.3  | 6.3        | 80                                                                                  |
| 88                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.1  | 4.1  | 4.4  | 4.4        | 88                                                                                  |
| 96                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.8  | 2.8        | 96                                                                                  |

|                                                                                        |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |    |      |    |      |    |                                                                                       |  |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------|------|------|------|------|----------------------------------------------------------------------------------------------|----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  ft |  | 0,3°                                                                                       | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                         | 1° | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                        |                                                                                     | 0°                                                                                         |      | 18°  |      | 36°  |      | 0°                                                                                           |    | 18°  |    | 36°  |    |                                                                                       |  |
| 1,000 lb                                                                               |                                                                                     |                                                                                            |      |      |      |      |      |                                                                                              |    |      |    | ft   |    |                                                                                       |  |
| 48                                                                                     |                                                                                     | 13.4                                                                                       | 12.7 | -    | -    | -    | -    | 11.3                                                                                         | -  | -    | -  | -    | -  | 48                                                                                    |  |
| 56                                                                                     |                                                                                     | 9.5                                                                                        | 9.2  | 10.5 | 10.3 | 11.6 | 11.2 | 7.5                                                                                          | -  | 8.7  | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                     |                                                                                     | 6.3                                                                                        | 6.3  | 7.2  | 7.2  | 8.1  | 8.1  | 4.5                                                                                          | -  | 5.6  | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                     |                                                                                     | 3.8                                                                                        | 3.8  | 4.7  | 4.7  | 5.4  | 5.4  | -                                                                                            | -  | 2.9  | -  | -    | -  | 72                                                                                    |  |

# HAV

|  0 lb + 33,100 lb |                                                                                   |      |  36.1 ft |          |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |                                                                                     |     |    |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|-----|----|
|                                                                                                    |                                                                                   |      |  42.3 ft |          |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |     |    |
|                   |  | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |     |    |
|                                                                                                    |                                                                                   | 0°   |                                                                                           | 18°      |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     | 36° |    |
|                                                                                                    |                                                                                   | ft   |                                                                                           | 1,000 lb |                                                                                           |      |                                                                                              |      |      |      |            |                                                                                     |     | ft |
| 10                                                                                                 |                                                                                   | 77.9 | 69.2                                                                                      | -        | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |     |    |
| 12                                                                                                 |                                                                                   | 73.4 | 66.0                                                                                      | -        | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |     |    |
| 14                                                                                                 |                                                                                   | 69.3 | 62.9                                                                                      | -        | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |     |    |
| 16                                                                                                 |                                                                                   | 65.6 | 59.9                                                                                      | -        | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 16                                                                                  |     |    |
| 18                                                                                                 |                                                                                   | 62.2 | 57.2                                                                                      | -        | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |     |    |
| 20                                                                                                 |                                                                                   | 59.1 | 54.5                                                                                      | 44.9     | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |     |    |
| 24                                                                                                 |                                                                                   | 53.6 | 50.1                                                                                      | 41.9     | 39.7                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |     |    |
| 28                                                                                                 |                                                                                   | 48.8 | 46.2                                                                                      | 39.3     | 37.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |     |    |
| 32                                                                                                 |                                                                                   | 41.3 | 40.8                                                                                      | 36.9     | 35.3                                                                                      | 29.0 | 27.8                                                                                         | 34.8 | 28.5 | -    | -          | 32                                                                                  |     |    |
| 36                                                                                                 |                                                                                   | 34.4 | 34.4                                                                                      | 34.0     | 33.2                                                                                      | 27.5 | 26.4                                                                                         | 30.9 | 27.4 | -    | -          | 36                                                                                  |     |    |
| 40                                                                                                 |                                                                                   | 28.5 | 28.5                                                                                      | 30.8     | 30.8                                                                                      | 26.0 | 24.9                                                                                         | 26.6 | 23.8 | 27.6 | -          | 40                                                                                  |     |    |
| 48                                                                                                 |                                                                                   | 21.0 | 21.0                                                                                      | 22.7     | 22.7                                                                                      | 22.8 | 22.2                                                                                         | 20.3 | 18.7 | 22.7 | 20.9       | 48                                                                                  |     |    |
| 56                                                                                                 |                                                                                   | 16.1 | 16.1                                                                                      | 17.2     | 17.2                                                                                      | 18.0 | 18.0                                                                                         | 15.5 | 14.6 | 17.2 | 16.5       | 56                                                                                  |     |    |
| 64                                                                                                 |                                                                                   | 12.6 | 12.6                                                                                      | 13.1     | 13.1                                                                                      | -    | -                                                                                            | 11.7 | 11.4 | 13.1 | 13.0       | 64                                                                                  |     |    |
| 72                                                                                                 |                                                                                   | -    | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | 8.9  | 8.9  | 10.2 | 10.2       | 72                                                                                  |     |    |
| 80                                                                                                 |                                                                                   | -    | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | 6.7  | 6.7  | 7.9  | 7.9        | 80                                                                                  |     |    |
| 88                                                                                                 |                                                                                   | -    | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | 4.7  | 4.7  | 6.0  | 6.0        | 88                                                                                  |     |    |
| 96                                                                                                 |                                                                                   | -    | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | 3.3  | 3.3  | 4.2  | 4.2        | 96                                                                                  |     |    |
| 104                                                                                                |                                                                                   | -    | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | -    | -    | 2.8  | 2.8        | 104                                                                                 |     |    |

|                                                                                     |                                                                                     |  181.1 ft |          |      |     |      |     |  196.9 ft |    |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------|------|-----|------|-----|------------------------------------------------------------------------------------------------|----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°       | 0,3° | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1° | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |          | 18°  |     | 36°  |     | 0°                                                                                             |    | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              | 1,000 lb |      |     |      |     |                                                                                                |    |      |    |      | ft |                                                                                       |  |
| 48                                                                                  |                                                                                     | 13.7                                                                                         | -        | -    | -   | -    | -   | -                                                                                              | -  | -    | -  | -    | -  | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 9.5                                                                                          | 9.1      | -    | -   | -    | -   | -                                                                                              | -  | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 6.1                                                                                          | 6.1      | 8.4  | -   | -    | -   | -                                                                                              | -  | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 3.6                                                                                          | 3.6      | 5.6  | 5.6 | 7.6  | -   | -                                                                                              | -  | -    | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | -                                                                                            | -        | 3.5  | 3.5 | 5.2  | 5.2 | -                                                                                              | -  | -    | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | -                                                                                            | -        | -    | -   | 3.2  | 3.2 | -                                                                                              | -  | -    | -  | -    | -  | 88                                                                                    |  |



# HAV

|  0 lb + 33,100 lb |                                                                                   |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |           |                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-----------|-------------------------------------------------------------------------------------|
|                                                                                                    |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft  |      |      |      |            |           |                                                                                     |
|                   |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°        |  |
|                                                                                                    |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |           |                                                                                     |
| ft                                                                                                 |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |           | ft                                                                                  |
| 14                                                                                                 | 49.3                                                                              | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 14                                                                                  |
| 16                                                                                                 | 47.3                                                                              | 41.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 16                                                                                  |
| 18                                                                                                 | 45.5                                                                              | 40.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 18                                                                                  |
| 20                                                                                                 | 43.6                                                                              | 39.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 20                                                                                  |
| 24                                                                                                 | 40.0                                                                              | 36.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 24                                                                                  |
| 28                                                                                                 | 36.8                                                                              | 33.8                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 28                                                                                  |
| 32                                                                                                 | 34.1                                                                              | 31.5                                                                                      | 26.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 32                                                                                  |
| 36                                                                                                 | 31.7                                                                              | 29.5                                                                                      | 24.8 | 23.6                                                                                      | -    | -                                                                                            | 27.5 | -    | -    | -          | -         | 36                                                                                  |
| 40                                                                                                 | 29.2                                                                              | 27.4                                                                                      | 23.4 | 22.3                                                                                      | -    | -                                                                                            | 26.4 | 23.4 | -    | -          | -         | 40                                                                                  |
| 48                                                                                                 | 22.7                                                                              | 22.7                                                                                      | 21.0 | 20.1                                                                                      | 16.1 | 15.5                                                                                         | 20.3 | 18.4 | -    | -          | -         | 48                                                                                  |
| 56                                                                                                 | 17.5                                                                              | 17.5                                                                                      | 18.7 | 17.9                                                                                      | 14.6 | 14.1                                                                                         | 15.5 | 14.6 | 17.8 | 16.9       | -         | 56                                                                                  |
| 64                                                                                                 | 13.9                                                                              | 13.9                                                                                      | 15.3 | 15.2                                                                                      | 13.4 | 13.0                                                                                         | 11.7 | 11.6 | 14.4 | 13.9       | -         | 64                                                                                  |
| 72                                                                                                 | 11.1                                                                              | 11.1                                                                                      | 12.2 | 12.2                                                                                      | 12.6 | 12.1                                                                                         | 9.1  | 9.1  | 11.3 | 11.3       | 13.0 13.0 | 72                                                                                  |
| 80                                                                                                 | 9.2                                                                               | 9.2                                                                                       | 9.8  | 9.8                                                                                       | -    | -                                                                                            | 6.8  | 6.8  | 8.9  | 8.9        | 10.5 10.5 | 80                                                                                  |
| 88                                                                                                 | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.2  | 5.2  | 7.0  | 7.0        | 8.4 8.4   | 88                                                                                  |
| 96                                                                                                 | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.7  | 3.7  | 5.3  | 5.3        | 6.7 6.7   | 96                                                                                  |
| 104                                                                                                | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.6  | 2.6  | 3.9  | 3.9        | 5.0 5.0   | 104                                                                                 |
| 112                                                                                                | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 3.7 3.7   | 112                                                                                 |

|    |     | 181.1 ft |    |      |    | 196.9 ft |    |      |    |      |    |
|----|-----|----------|----|------|----|----------|----|------|----|------|----|
|    |     | 0,3°     | 1° | 0,3° | 1° | 0,3°     | 1° | 0,3° | 1° | 0,3° | 1° |
|    |     | 0°       |    | 18°  |    | 36°      |    | 0°   |    | 18°  |    |
|    |     | 1,000 lb |    |      |    |          |    |      |    |      |    |
| ft |     |          |    |      |    |          |    |      |    |      | ft |
| 56 | 9.1 | 8.9      | -  | -    | -  | -        | -  | -    | -  | -    | 56 |
| 64 | 5.9 | 5.9      | -  | -    | -  | -        | -  | -    | -  | -    | 64 |
| 72 | 3.6 | 3.6      | -  | -    | -  | -        | -  | -    | -  | -    | 72 |

|  0 lb +  33,100 lb |                                                                                     |      |  75.5 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |     |     |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------|------|------|------|------------|-----|-----|---------------------------------------------------------------------------------------|
|                                                                                                                                                                                          |                                                                                     |      |  42.3 ft |      |                                                                                             |      |  126.0 ft |      |      |      |            |     |     |                                                                                       |
|                                                                                                       |  | 0,3° |                                                                                             | 1°   |                                                                                             | 0,3° |                                                                                                | 1°   |      | 0,3° |            | 1°  |     |  |
|                                                                                                                                                                                          |                                                                                     | 0°   |                                                                                             | 18°  |                                                                                             | 36°  |                                                                                                | 0°   |      | 18°  |            | 36° |     |                                                                                       |
| ft                                                                                                                                                                                       |                                                                                     |      | 1,000 lb                                                                                    |      |                                                                                             |      |                                                                                                |      |      |      |            |     | ft  |                                                                                       |
| 18                                                                                                                                                                                       | 32.9                                                                                | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -   | 18  |                                                                                       |
| 20                                                                                                                                                                                       | 32.1                                                                                | 26.6 | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -   | 20  |                                                                                       |
| 24                                                                                                                                                                                       | 30.4                                                                                | 25.4 | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -   | 24  |                                                                                       |
| 28                                                                                                                                                                                       | 28.7                                                                                | 24.2 | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -   | 28  |                                                                                       |
| 32                                                                                                                                                                                       | 26.8                                                                                | 23.0 | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -   | 32  |                                                                                       |
| 36                                                                                                                                                                                       | 25.2                                                                                | 21.7 | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -   | 36  |                                                                                       |
| 40                                                                                                                                                                                       | 23.6                                                                                | 20.6 | 19.0                                                                                        | -    | -                                                                                           | -    | 21.6                                                                                           | 19.1 | -    | -    | -          | -   | 40  |                                                                                       |
| 48                                                                                                                                                                                       | 20.9                                                                                | 18.5 | 16.7                                                                                        | 15.6 | -                                                                                           | -    | 18.6                                                                                           | 17.0 | -    | -    | -          | -   | 48  |                                                                                       |
| 56                                                                                                                                                                                       | 18.0                                                                                | 16.7 | 14.8                                                                                        | 14.0 | -                                                                                           | -    | 14.5                                                                                           | 14.2 | -    | -    | -          | -   | 56  |                                                                                       |
| 64                                                                                                                                                                                       | 14.6                                                                                | 14.4 | 13.3                                                                                        | 12.6 | 10.1                                                                                        | 9.9  | 11.0                                                                                           | 11.0 | 12.2 | -    | -          | -   | 64  |                                                                                       |
| 72                                                                                                                                                                                       | 11.7                                                                                | 11.7 | 11.9                                                                                        | 11.5 | 9.3                                                                                         | 9.1  | 8.4                                                                                            | 8.4  | 11.3 | 11.3 | -          | -   | 72  |                                                                                       |
| 80                                                                                                                                                                                       | 9.7                                                                                 | 9.7  | 10.8                                                                                        | 10.4 | 8.7                                                                                         | 8.3  | 6.3                                                                                            | 6.3  | 8.9  | 8.9  | 9.5        | 9.0 | 80  |                                                                                       |
| 88                                                                                                                                                                                       | 8.1                                                                                 | 8.1  | 9.1                                                                                         | 9.1  | 8.1                                                                                         | 7.8  | 4.6                                                                                            | 4.6  | 7.0  | 7.0  | 8.8        | 8.5 | 88  |                                                                                       |
| 96                                                                                                                                                                                       | 6.7                                                                                 | 6.7  | 7.5                                                                                         | 7.5  | 7.7                                                                                         | 7.4  | 3.3                                                                                            | 3.3  | 5.3  | 5.3  | 7.4        | 7.4 | 96  |                                                                                       |
| 104                                                                                                                                                                                      | 5.6                                                                                 | 5.6  | 6.1                                                                                         | 6.1  | -                                                                                           | -    | -                                                                                              | -    | 4.1  | 4.1  | 5.9        | 5.9 | 104 |                                                                                       |
| 112                                                                                                                                                                                      | -                                                                                   | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | 4.6        | 4.6 | 112 |                                                                                       |
| 120                                                                                                                                                                                      | -                                                                                   | -    | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | 3.3        | 3.3 | 120 |                                                                                       |



# HAV

|  99,200 lb +  33,100 lb |                                                                                   |  16.4 ft |      |  11.5 ft |      |  32.2 ft/s |      | 360°                                                                                         |      | ASME B30.5 |      |      |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------|------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |                                                                                             |      |  126.0 ft |      |            |      |      |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                        | 1°   | 0,3°                                                                                         | 1°   | 0,3°       | 1°   | 0,3° | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                         |      | 0°                                                                                           |      | 18°        |      | 36°  |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                             |      |                                                                                              |      |            |      |      |      | ft                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 97.4                                                                                      | 92.4 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 93.1                                                                                      | 88.6 | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 85.9                                                                                      | 82.2 | 71.6                                                                                      | 69.3 | -                                                                                           | -    | -                                                                                            | -    | -          | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 79.8                                                                                      | 76.7 | 67.8                                                                                      | 65.9 | 57.5                                                                                        | 56.6 | -                                                                                            | -    | -          | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 70.8                                                                                      | 70.1 | 63.6                                                                                      | 62.4 | 54.9                                                                                        | 54.2 | -                                                                                            | -    | -          | -    | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 60.9                                                                                      | 60.9 | 58.4                                                                                      | 57.9 | 53.3                                                                                        | 52.6 | -                                                                                            | -    | -          | -    | -    | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 51.9                                                                                      | 51.9 | 52.8                                                                                      | 52.8 | -                                                                                           | -    | -                                                                                            | -    | -          | -    | -    | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 39.2                                                                                         | 39.2 | -          | -    | -    | -    | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 30.9                                                                                         | 30.9 | 31.9       | 31.9 | -    | -    | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 25.8                                                                                         | 25.8 | 25.8       | 25.8 | 26.3 | 26.3 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 21.9                                                                                         | 21.9 | 22.3       | 22.3 | 22.1 | 22.1 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 18.3                                                                                         | 18.3 | 18.7       | 18.7 | 19.1 | 19.1 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 15.6                                                                                         | 15.6 | 15.9       | 15.9 | 16.2 | 16.2 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 13.7                                                                                         | 13.7 | 13.8       | 13.8 | 13.9 | 13.9 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 11.7                                                                                         | 11.7 | 11.9       | 11.9 | 12.1 | 12.1 | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 10.1                                                                                         | 10.1 | 10.3       | 10.3 | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 8.7                                                                                          | 8.7  | 8.9        | 8.9  | -    | -    | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | 7.5                                                                                          | 7.5  | -          | -    | -    | -    | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | -    | -    | 136                                                                                 |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | -    | -    | 144                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      |      |      | ft                                                                                    |
| 72                                                                                  |                                                                                     | 19.9                                                                                         | 19.0 | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | 72                                                                                    |
| 80                                                                                  |                                                                                     | 16.5                                                                                         | 16.5 | 16.8 | 16.6 | 16.9     | 16.9 | 15.6                                                                                           | 15.5 | 16.2 | 16.1 | 16.7 | 16.7 | 80                                                                                    |
| 88                                                                                  |                                                                                     | 13.6                                                                                         | 13.6 | 14.1 | 14.1 | 14.5     | 14.5 | 12.8                                                                                           | 12.8 | 13.3 | 13.3 | 13.9 | 13.9 | 88                                                                                    |
| 96                                                                                  |                                                                                     | 11.2                                                                                         | 11.2 | 11.7 | 11.7 | 12.1     | 12.1 | 10.2                                                                                           | 10.2 | 10.9 | 10.9 | 11.3 | 11.3 | 96                                                                                    |
| 104                                                                                 |                                                                                     | 9.1                                                                                          | 9.1  | 9.7  | 9.7  | 10.0     | 10.0 | 8.2                                                                                            | 8.2  | 8.6  | 8.6  | 9.1  | 9.1  | 104                                                                                   |
| 112                                                                                 |                                                                                     | 7.4                                                                                          | 7.4  | 7.8  | 7.8  | 8.1      | 8.1  | 6.3                                                                                            | 6.3  | 6.7  | 6.7  | 7.2  | 7.2  | 112                                                                                   |
| 120                                                                                 |                                                                                     | 5.8                                                                                          | 5.8  | 6.1  | 6.1  | 6.5      | 6.5  | 4.8                                                                                            | 4.8  | 5.2  | 5.2  | 5.6  | 5.6  | 120                                                                                   |
| 128                                                                                 |                                                                                     | 4.4                                                                                          | 4.4  | 4.7  | 4.7  | 5.0      | 5.0  | 3.4                                                                                            | 3.4  | 3.9  | 3.9  | 4.1  | 4.1  | 128                                                                                   |
| 136                                                                                 |                                                                                     | 3.3                                                                                          | 3.3  | 3.5  | 3.5  | 3.8      | 3.8  | -                                                                                              | -    | 2.7  | 2.7  | 2.9  | 2.9  | 136                                                                                   |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | 2.5  | 2.5  | 2.7      | 2.7  | -                                                                                              | -    | -    | -    | -    | -    | 144                                                                                   |



# HAV

|  99,200 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|----------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                        |  |
|  ft                                                                                                      |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  ft |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                        |  |
| 1,000 lb                                                                                                                                                                                  |                                                                                   |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                     |  |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                     |  |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                     |  |
| 32                                                                                                                                                                                        |                                                                                   | 45.3                                                                                      | 42.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                     |  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 40.1 | 34.9                                                                                      | 33.3 | -                                                                                            | -    | -    | -    | -          | -    | 36                                                                                     |  |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 37.4 | 33.0                                                                                      | 31.5 | 26.0                                                                                         | 24.9 | -    | -    | -          | -    | 40                                                                                     |  |
| 48                                                                                                                                                                                        |                                                                                   | 34.7                                                                                      | 33.2 | 29.1                                                                                      | 28.1 | 23.5                                                                                         | 22.7 | -    | -    | -          | -    | 48                                                                                     |  |
| 56                                                                                                                                                                                        |                                                                                   | 30.8                                                                                      | 29.6 | 26.2                                                                                      | 25.4 | 22.0                                                                                         | 21.4 | 30.9 | 30.7 | -          | -    | 56                                                                                     |  |
| 64                                                                                                                                                                                        |                                                                                   | 27.2                                                                                      | 26.2 | 24.1                                                                                      | 23.5 | -                                                                                            | -    | 25.6 | 25.6 | 26.3       | 26.3 | 64                                                                                     |  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 21.3 | 21.3 | 22.6       | 22.6 | 72                                                                                     |  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 18.5 | 18.5 | 18.9       | 18.9 | 80                                                                                     |  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.2 | 16.2 | 16.4       | 15.9 | 88                                                                                     |  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.9 | 13.9 | 14.1       | 13.9 | 96                                                                                     |  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.9 | 11.9 | 12.3       | 12.3 | 104                                                                                    |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.5 | 10.5 | 10.7       | 10.7 | 112                                                                                    |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.2  | 9.2  | 9.4        | 9.4  | 120                                                                                    |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.0  | 8.0  | 8.0        | 8.0  | 128                                                                                    |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.9  | 6.9  | 7.1        | 7.1  | 136                                                                                    |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.8  | 5.8  | 6.0        | 6.0  | 144                                                                                    |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------|------|------|----------|------|-----------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                        | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                          | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                          |      | 18°  |      | 36°      |      | 0°                                                                                            |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                             |      |      |      | 1,000 lb |      |                                                                                               |      |      |      |      |      | ft                                                                                    |  |
| 80                                                                                  |                                                                                     | 16.3                                                                                        | 15.9 | 17.8 | 17.6 | -        | -    | 15.8                                                                                          | 15.3 | -    | -    | -    | -    | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 14.0                                                                                        | 13.9 | 14.7 | 14.7 | 15.6     | 15.6 | 12.9                                                                                          | 12.9 | 14.4 | 14.2 | -    | -    | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 11.9                                                                                        | 11.9 | 12.6 | 12.5 | 13.2     | 13.2 | 10.4                                                                                          | 10.4 | 12.0 | 11.9 | 12.8 | 12.8 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 9.7                                                                                         | 9.7  | 10.8 | 10.8 | 11.4     | 11.4 | 8.4                                                                                           | 8.4  | 9.7  | 9.7  | 10.8 | 10.8 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 8.1                                                                                         | 8.1  | 8.9  | 8.9  | 9.6      | 9.6  | 6.7                                                                                           | 6.7  | 7.8  | 7.8  | 8.9  | 8.9  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 6.5                                                                                         | 6.5  | 7.3  | 7.3  | 8.0      | 8.0  | 5.2                                                                                           | 5.2  | 6.3  | 6.3  | 7.1  | 7.1  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 5.0                                                                                         | 5.0  | 5.8  | 5.8  | 6.5      | 6.5  | 4.0                                                                                           | 4.0  | 5.0  | 5.0  | 5.6  | 5.6  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 3.8                                                                                         | 3.8  | 4.5  | 4.5  | 5.2      | 5.2  | 2.9                                                                                           | 2.9  | 3.6  | 3.6  | 4.3  | 4.3  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 2.7                                                                                         | 2.7  | 3.4  | 3.4  | 3.8      | 3.8  | -                                                                                             | -    | 2.5  | 2.5  | 3.1  | 3.1  | 144                                                                                   |  |



# HAV

|  99,200 lb +  33,100 lb |      |  55.8 ft |      |  11.5 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |      |     |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-----|-------------------------------------------------------------------------------------|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |     |                                                                                     |
|                                                                                                                                                                                           |      | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |      |     |                                                                                     |
|                                                                                                                                                                                           |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°  |     |  |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft   |     |                                                                                     |
| 32                                                                                                                                                                                        | 34.1 | 31.5                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 32  |                                                                                     |
| 36                                                                                                                                                                                        | 31.7 | 29.5                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 36  |                                                                                     |
| 40                                                                                                                                                                                        | 29.5 | 27.5                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 40  |                                                                                     |
| 48                                                                                                                                                                                        | 25.8 | 24.4                                                                                      | 21.0 | 20.1                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 48  |                                                                                     |
| 56                                                                                                                                                                                        | 22.9 | 21.7                                                                                      | 18.9 | 17.9                                                                                      | -    | -                                                                                            | 28.9 | 25.0 | -    | -          | -    | -    | 56  |                                                                                     |
| 64                                                                                                                                                                                        | 20.3 | 19.2                                                                                      | 16.9 | 16.2                                                                                      | 13.4 | 13.0                                                                                         | 25.5 | 23.8 | -    | -          | -    | -    | 64  |                                                                                     |
| 72                                                                                                                                                                                        | 18.1 | 17.2                                                                                      | 15.5 | 14.8                                                                                      | 12.6 | 12.1                                                                                         | 21.9 | 21.2 | -    | -          | -    | -    | 72  |                                                                                     |
| 80                                                                                                                                                                                        | 16.3 | 15.7                                                                                      | 14.2 | 13.8                                                                                      | -    | -                                                                                            | 18.5 | 18.1 | 18.3 | 17.3       | -    | -    | 80  |                                                                                     |
| 88                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.8 | 15.7 | 16.5 | 16.1       | 13.3 | 12.6 | 88  |                                                                                     |
| 96                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.0 | 13.4 | 14.4 | 14.4       | 12.7 | 12.2 | 96  |                                                                                     |
| 104                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.1 | 12.0 | 12.6 | 12.6       | 12.4 | 11.9 | 104 |                                                                                     |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.3 | 10.3 | 10.7 | 10.7       | 11.6 | 11.2 | 112 |                                                                                     |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.4  | 9.4  | 9.7  | 9.7        | 10.0 | 10.0 | 120 |                                                                                     |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.3  | 8.3  | 8.6  | 8.6        | 8.8  | 8.8  | 128 |                                                                                     |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.1  | 7.1  | 7.7  | 7.7        | 7.8  | 7.8  | 136 |                                                                                     |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.2  | 6.2  | 6.7  | 6.7        | 6.9  | 6.9  | 144 |                                                                                     |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.4  | 5.4  | 5.7  | 5.7        | -    | -    | 152 |                                                                                     |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.6  | 4.6  | 5.0  | 5.0        | -    | -    | 160 |                                                                                     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |          |      |      |  196.9 ft |      |      |      |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------|------|----------|------|------|-----------------------------------------------------------------------------------------------|------|------|------|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                        | 1°   | 0,3° | 1°       | 0,3° | 1°   | 0,3°                                                                                          | 1°   | 0,3° | 1°   | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                          |      | 18°  |          | 36°  |      | 0°                                                                                            |      | 18°  |      | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                             |      |      | 1,000 lb |      |      |                                                                                               |      |      | ft   |      |     |                                                                                       |  |
| 80                                                                                  |                                                                                     | 16.5                                                                                        | 15.4 | -    | -        | -    | -    | 14.7                                                                                          | 12.6 | -    | -    | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 13.6                                                                                        | 13.5 | 14.5 | 14.4     | -    | -    | 12.9                                                                                          | 12.2 | -    | -    | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 11.8                                                                                        | 11.7 | 13.3 | 13.1     | -    | -    | 10.6                                                                                          | 10.6 | 12.0 | 11.9 | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 9.9                                                                                         | 9.9  | 11.3 | 11.3     | 11.8 | 11.5 | 8.6                                                                                           | 8.6  | 10.6 | 10.6 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 8.3                                                                                         | 8.3  | 9.6  | 9.6      | 10.7 | 10.7 | 6.8                                                                                           | 6.8  | 8.7  | 8.7  | 9.9  | 9.9 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 7.0                                                                                         | 7.0  | 8.4  | 8.4      | 9.1  | 9.1  | 5.4                                                                                           | 5.4  | 7.1  | 7.1  | 8.7  | 8.7 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 5.6                                                                                         | 5.6  | 6.9  | 6.9      | 7.9  | 7.9  | 4.2                                                                                           | 4.2  | 5.7  | 5.7  | 7.2  | 7.2 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 4.4                                                                                         | 4.4  | 5.8  | 5.8      | 6.7  | 6.7  | 3.1                                                                                           | 3.1  | 4.5  | 4.5  | 5.8  | 5.8 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 3.4                                                                                         | 3.4  | 4.5  | 4.5      | 5.4  | 5.4  | -                                                                                             | -    | 3.6  | 3.6  | 4.7  | 4.7 | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | -                                                                                           | -    | 3.4  | 3.4      | 4.3  | 4.3  | -                                                                                             | -    | -    | -    | 3.4  | 3.4 | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | -                                                                                           | -    | -    | -        | 3.2  | 3.2  | -                                                                                             | -    | -    | -    | -    | -   | 160                                                                                   |  |





# HAV

|  99,200 lb +  33,100 lb |                                                                                   |      |  75.5 ft |      |  11.5 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |      |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |                                                                                     |
|                                                                                                          |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                           |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |      |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 25.2 | 21.7                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 23.6 | 20.6                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 20.9 | 18.5                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 18.5 | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 16.3 | 15.1                                                                                      | 13.3 | 12.6                                                                                      | -        | -                                                                                            | 19.2 | 17.4 | -    | -          | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | 14.6 | 13.5                                                                                      | 11.9 | 11.5                                                                                      | -        | -                                                                                            | 18.1 | 16.6 | -    | -          | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | 13.0 | 12.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7      | 8.3                                                                                          | 17.0 | 15.7 | 13.3 | 12.3       | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | 11.8 | 11.1                                                                                      | 10.1 | 9.6                                                                                       | 8.1      | 7.8                                                                                          | 15.3 | 14.7 | 12.5 | 11.7       | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | 10.8 | 10.2                                                                                      | 9.3  | 9.0                                                                                       | 7.7      | 7.4                                                                                          | 13.6 | 13.3 | 11.7 | 11.0       | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | 10.0 | 9.4                                                                                       | 8.7  | 8.4                                                                                       | -        | -                                                                                            | 11.7 | 11.7 | 11.1 | 10.4       | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 10.1 | 10.1 | 10.6 | 10.1       | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 9.0  | 9.0  | 9.8  | 9.5        | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.8  | 7.8  | 8.5  | 8.5        | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.0  | 7.0  | 7.5  | 7.5        | 136                                                                                 |
| 144                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 6.2  | 6.2  | 6.4  | 6.4        | 144                                                                                 |
| 152                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.2  | 5.2  | 5.8  | 5.8        | 152                                                                                 |
| 160                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 4.5  | 4.5  | 5.0  | 5.0        | 160                                                                                 |
| 168                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.9  | 3.9  | 4.2  | 4.2        | 168                                                                                 |
| 176                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.4  | 3.4  | 3.6  | 3.6        | 176                                                                                 |
| 184                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 2.8  | 2.8  | -    | -          | 184                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |          |     |  196.9 ft |     |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|----------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3°     | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°      |     | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |     | 1,000 lb |     |                                                                                                |     |      |     | ft   |     |                                                                                       |  |
| 80                                                                                  |                                                                                     | 13.8                                                                                         | 11.2 | -    | -   | -        | -   | 11.4                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 12.9                                                                                         | 11.2 | -    | -   | -        | -   | 11.1                                                                                           | 8.8 | -    | -   | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 10.9                                                                                         | 10.4 | -    | -   | -        | -   | 9.7                                                                                            | 8.8 | -    | -   | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 9.5                                                                                          | 9.4  | 10.4 | 9.8 | -        | -   | 7.9                                                                                            | 7.9 | 9.6  | 8.8 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 7.6                                                                                          | 7.6  | 9.4  | 9.4 | 7.9      | 7.5 | 6.3                                                                                            | 6.3 | 8.7  | 8.7 | -    | -   | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 6.3                                                                                          | 6.3  | 8.0  | 8.0 | 7.7      | 7.2 | 4.8                                                                                            | 4.8 | 7.1  | 7.1 | 7.7  | 7.1 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 5.1                                                                                          | 5.1  | 6.9  | 6.9 | 7.5      | 7.1 | 3.7                                                                                            | 3.7 | 5.7  | 5.7 | 7.3  | 6.9 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 4.0                                                                                          | 4.0  | 5.8  | 5.8 | 6.9      | 6.7 | 2.7                                                                                            | 2.7 | 4.5  | 4.5 | 6.3  | 6.2 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 3.1                                                                                          | 3.1  | 4.7  | 4.7 | 6.0      | 6.0 | -                                                                                              | -   | 3.6  | 3.6 | 5.1  | 5.1 | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | -                                                                                            | -    | 3.8  | 3.8 | 4.9      | 4.9 | -                                                                                              | -   | -    | -   | 4.0  | 4.0 | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | -                                                                                            | -    | 2.8  | 2.8 | 3.9      | 3.9 | -                                                                                              | -   | -    | -   | 3.1  | 3.1 | 160                                                                                   |  |



# HAV

|  77,200 lb +  33,100 lb |  |          |  16.4 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|
|                         |  |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |
|                                                                                                                                                                                           |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |
|                                                                                                                                                                                           |  | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            | 36°  |      |
| ft                                                                                                                                                                                        |  | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft   |      |
| 10                                                                                                                                                                                        |  | 119.2    | 111.6                                                                                     | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10   |
| 12                                                                                                                                                                                        |  | 113.1    | 106.0                                                                                     | 86.0 | 82.2                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 12   |
| 14                                                                                                                                                                                        |  | 107.3    | 101.1                                                                                     | 83.0 | 79.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 14   |
| 16                                                                                                                                                                                        |  | 102.0    | 96.4                                                                                      | 80.3 | 77.0                                                                                      | 67.3 | 64.9                                                                                         | -    | -    | -    | -          | -    | 16   |
| 18                                                                                                                                                                                        |  | 97.4     | 92.4                                                                                      | 77.9 | 74.8                                                                                      | 65.7 | 63.6                                                                                         | -    | -    | -    | -          | -    | 18   |
| 20                                                                                                                                                                                        |  | 93.1     | 88.6                                                                                      | 75.5 | 72.7                                                                                      | 64.1 | 62.4                                                                                         | -    | -    | -    | -          | -    | 20   |
| 24                                                                                                                                                                                        |  | 85.6     | 82.2                                                                                      | 71.6 | 69.3                                                                                      | 60.5 | 59.4                                                                                         | -    | -    | -    | -          | -    | 24   |
| 28                                                                                                                                                                                        |  | 74.4     | 73.3                                                                                      | 67.8 | 65.9                                                                                      | 57.5 | 56.6                                                                                         | 64.3 | 57.5 | -    | -          | -    | 28   |
| 32                                                                                                                                                                                        |  | 61.0     | 61.0                                                                                      | 61.5 | 61.1                                                                                      | 54.9 | 54.2                                                                                         | 56.3 | 51.8 | 57.7 | -          | -    | 32   |
| 36                                                                                                                                                                                        |  | 51.9     | 51.9                                                                                      | 53.0 | 53.0                                                                                      | 50.5 | 50.1                                                                                         | 49.9 | 46.1 | 50.3 | 47.2       | 49.0 | 36   |
| 40                                                                                                                                                                                        |  | 43.9     | 43.9                                                                                      | 44.7 | 44.7                                                                                      | -    | -                                                                                            | 43.2 | 40.8 | 43.4 | 42.3       | 44.7 | 42.6 |
| 48                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 33.6 | 33.6 | 33.8 | 33.6       | 34.6 | 34.6 |
| 56                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 27.1 | 27.1 | 27.4 | 27.4       | 27.7 | 27.7 |
| 64                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 22.2 | 22.2 | 22.5 | 22.4       | 22.9 | 22.9 |
| 72                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 18.2 | 18.2 | 18.8 | 18.8       | 19.0 | 19.0 |
| 80                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.2 | 15.2 | 15.7 | 15.7       | 15.9 | 15.9 |
| 88                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.7 | 12.7 | 13.1 | 13.1       | 13.3 | 13.3 |
| 96                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.7 | 10.7 | 10.9 | 10.9       | 11.2 | 11.2 |
| 104                                                                                                                                                                                       |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.0  | 9.0  | 9.2  | 9.2        | 9.5  | 9.5  |
| 112                                                                                                                                                                                       |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.4  | 7.4  | 7.6  | 7.6        | -    | -    |
| 120                                                                                                                                                                                       |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.1  | 6.1  | 6.3  | 6.3        | -    | -    |
| 128                                                                                                                                                                                       |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.1  | 5.1  | -    | -          | -    | -    |

|                                                                                     |                                                                                     |  181.1 ft |      |      |          |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|----------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°       | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |          | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      | 1,000 lb |      |      |                                                                                                |      |      |      |      | ft   |                                                                                       |  |
| 48                                                                                  |                                                                                     | 30.6                                                                                         | 27.0 | -    | -        | -    | -    | 26.3                                                                                           | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 24.8                                                                                         | 22.9 | 24.9 | 23.5     | 26.0 | 24.1 | 22.7                                                                                           | 20.9 | 23.9 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 19.7                                                                                         | 18.8 | 20.6 | 19.8     | 21.0 | 20.4 | 18.1                                                                                           | 17.1 | 19.2 | 18.0 | 20.1 | 18.8 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 15.7                                                                                         | 15.5 | 16.4 | 16.2     | 17.1 | 17.0 | 14.4                                                                                           | 13.7 | 15.3 | 14.6 | 16.2 | 15.3 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 12.8                                                                                         | 12.8 | 13.5 | 13.5     | 13.9 | 13.9 | 11.5                                                                                           | 11.1 | 12.3 | 12.0 | 13.0 | 12.6 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 10.2                                                                                         | 10.2 | 10.9 | 10.9     | 11.3 | 11.3 | 8.9                                                                                            | 8.9  | 9.5  | 9.5  | 10.2 | 10.1 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 7.9                                                                                          | 7.9  | 8.6  | 8.6      | 9.0  | 9.0  | 6.7                                                                                            | 6.7  | 7.4  | 7.4  | 7.9  | 7.9  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 6.0                                                                                          | 6.0  | 6.6  | 6.6      | 6.9  | 6.9  | 5.0                                                                                            | 5.0  | 5.5  | 5.5  | 6.0  | 6.0  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 4.5                                                                                          | 4.5  | 5.0  | 5.0      | 5.2  | 5.2  | 3.5                                                                                            | 3.5  | 3.9  | 3.9  | 4.3  | 4.3  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 3.1                                                                                          | 3.1  | 3.4  | 3.4      | 3.7  | 3.7  | -                                                                                              | -    | -    | -    | -    | -    | 120                                                                                   |  |

# HAV

|  77,200 lb +  33,100 lb |      |  36.1 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |     |
|                                                                                                                                                                                           |      | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |                                                                                     |     |
|                                                                                                                                                                                           |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°                                                                                 |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      | ft         |      |                                                                                     |     |
| 10                                                                                                                                                                                        | 77.9 | 69.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 10  |
| 12                                                                                                                                                                                        | 73.4 | 66.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 12  |
| 14                                                                                                                                                                                        | 69.3 | 62.9                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 14  |
| 16                                                                                                                                                                                        | 65.6 | 59.9                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 16  |
| 18                                                                                                                                                                                        | 62.2 | 57.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 18  |
| 20                                                                                                                                                                                        | 59.1 | 54.5                                                                                      | 44.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 20  |
| 24                                                                                                                                                                                        | 53.6 | 50.1                                                                                      | 41.9 | 39.7                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 24  |
| 28                                                                                                                                                                                        | 49.2 | 46.2                                                                                      | 39.3 | 37.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 28  |
| 32                                                                                                                                                                                        | 45.3 | 42.9                                                                                      | 36.9 | 35.3                                                                                      | 29.0 | 27.8                                                                                         | 51.0 | 45.2 | -    | -          | -    | -                                                                                   | 32  |
| 36                                                                                                                                                                                        | 42.1 | 40.1                                                                                      | 34.9 | 33.3                                                                                      | 27.5 | 26.4                                                                                         | 46.7 | 42.2 | -    | -          | -    | -                                                                                   | 36  |
| 40                                                                                                                                                                                        | 39.1 | 37.4                                                                                      | 33.0 | 31.5                                                                                      | 26.0 | 24.9                                                                                         | 42.2 | 39.7 | 37.4 | -          | -    | -                                                                                   | 40  |
| 48                                                                                                                                                                                        | 34.4 | 33.2                                                                                      | 29.1 | 28.1                                                                                      | 23.5 | 22.7                                                                                         | 33.6 | 32.1 | 33.5 | 32.6       | -    | -                                                                                   | 48  |
| 56                                                                                                                                                                                        | 28.9 | 28.7                                                                                      | 26.2 | 25.4                                                                                      | 22.0 | 21.4                                                                                         | 27.0 | 26.9 | 28.3 | 28.3       | 25.1 | 24.4                                                                                | 56  |
| 64                                                                                                                                                                                        | 23.7 | 23.7                                                                                      | 23.6 | 23.5                                                                                      | -    | -                                                                                            | 22.3 | 22.3 | 23.1 | 22.6       | 23.3 | 23.1                                                                                | 64  |
| 72                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 18.6 | 18.6 | 19.1 | 19.0       | 19.5 | 19.5                                                                                | 72  |
| 80                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.9 | 15.9 | 16.0 | 16.0       | 16.7 | 16.7                                                                                | 80  |
| 88                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.4 | 13.4 | 13.8 | 13.8       | 14.1 | 14.1                                                                                | 88  |
| 96                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.4 | 11.4 | 12.0 | 12.0       | 12.3 | 12.3                                                                                | 96  |
| 104                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.5  | 9.5  | 10.2 | 10.2       | 10.6 | 10.6                                                                                | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.1  | 8.1  | 8.7  | 8.7        | 9.0  | 9.0                                                                                 | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.7  | 6.7  | 7.2  | 7.2        | 7.6  | 7.6                                                                                 | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.5  | 5.5  | 5.9  | 5.9        | 3.4  | 3.4                                                                                 | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.4  | 4.4  | 4.9  | 4.9        | -    | -                                                                                   | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.6  | 3.6  | 3.8  | 3.8        | -    | -                                                                                   | 144 |

|   |           |  181.1 ft |           |           |           |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°   | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°        | 18°       | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |           |           |                                                                                                |         |         |         | ft                                                                                    |     |
| 56                                                                                                                                                                      | 23.7 20.6 | - -                                                                                          | - -       | 20.6 17.0 | - -       | - -                                                                                            | - -     | - -     | - -     | 56                                                                                    | 56  |
| 64                                                                                                                                                                      | 19.8 18.3 | 19.3 -                                                                                       | - -       | 18.1 16.3 | - -       | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 16.2 15.3 | 17.5 17.0                                                                                    | 16.6 -    | 14.4 13.7 | 16.4 -    | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 13.0 12.7 | 14.7 14.2                                                                                    | 15.3 15.1 | 11.3 11.1 | 13.2 12.7 | 14.7 14.1                                                                                      | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 10.4 10.4 | 12.0 11.8                                                                                    | 13.1 12.9 | 8.8 8.8   | 10.4 10.4 | 12.0 11.6                                                                                      | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 8.3 8.3   | 9.7 9.7                                                                                      | 10.8 10.8 | 6.7 6.7   | 8.1 8.1   | 9.6 9.5                                                                                        | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 6.4 6.4   | 7.7 7.7                                                                                      | 8.8 8.8   | 5.0 5.0   | 6.4 6.4   | 7.5 7.5                                                                                        | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | 5.0 5.0   | 6.1 6.1                                                                                      | 7.0 7.0   | 3.5 3.5   | 4.8 4.8   | 5.9 5.9                                                                                        | - -     | - -     | - -     | 112                                                                                   | 112 |
| 120                                                                                                                                                                     | 3.7 3.7   | 4.5 4.5                                                                                      | 5.4 5.4   | - -       | 3.4 3.4   | 4.3 4.3                                                                                        | - -     | - -     | - -     | 120                                                                                   | 120 |
| 128                                                                                                                                                                     | - -       | 3.3 3.3                                                                                      | 4.0 4.0   | - -       | - -       | 3.1 3.1                                                                                        | - -     | - -     | - -     | 128                                                                                   | 128 |
| 136                                                                                                                                                                     | - -       | - -                                                                                          | 2.7 2.7   | - -       | - -       | - -                                                                                            | - -     | - -     | - -     | 136                                                                                   | 136 |



# HAV

|  77,200 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  11.5 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        | 49.3                                                                              | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        | 47.3                                                                              | 41.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        | 45.5                                                                              | 40.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        | 43.6                                                                              | 39.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        | 40.0                                                                              | 36.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        | 36.8                                                                              | 33.8                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        | 34.1                                                                              | 31.5                                                                                      | 26.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        | 31.7                                                                              | 29.5                                                                                      | 24.8 | 23.6                                                                                      | -    | -                                                                                            | 33.9 | 28.3 | -    | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        | 29.5                                                                              | 27.5                                                                                      | 23.4 | 22.3                                                                                      | -    | -                                                                                            | 32.9 | 27.7 | -    | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        | 25.8                                                                              | 24.4                                                                                      | 21.0 | 20.1                                                                                      | 16.1 | 15.5                                                                                         | 30.5 | 26.3 | -    | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        | 22.9                                                                              | 21.7                                                                                      | 18.9 | 17.9                                                                                      | 14.6 | 14.1                                                                                         | 27.0 | 24.5 | 22.1 | 20.7       | -    | 56                                                                                  |     |
| 64                                                                                                                                                                                        | 20.3                                                                              | 19.2                                                                                      | 16.9 | 16.2                                                                                      | 13.4 | 13.0                                                                                         | 22.4 | 21.9 | 20.8 | 19.5       | -    | 64                                                                                  |     |
| 72                                                                                                                                                                                        | 18.1                                                                              | 17.2                                                                                      | 15.5 | 14.8                                                                                      | 12.6 | 12.1                                                                                         | 18.6 | 18.4 | 19.4 | 18.3       | 14.3 | 13.7                                                                                | 72  |
| 80                                                                                                                                                                                        | 16.3                                                                              | 15.7                                                                                      | 14.2 | 13.8                                                                                      | -    | -                                                                                            | 15.7 | 15.7 | 16.7 | 16.7       | 13.8 | 13.1                                                                                | 80  |
| 88                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.5 | 13.5 | 14.1 | 14.1       | 13.3 | 12.6                                                                                | 88  |
| 96                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.7 | 11.6 | 12.3 | 12.3       | 12.5 | 12.2                                                                                | 96  |
| 104                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.1 | 10.1 | 10.7 | 10.7       | 11.2 | 11.2                                                                                | 104 |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.7  | 8.7  | 9.4  | 9.4        | 9.8  | 9.6                                                                                 | 112 |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.4  | 7.4  | 8.3  | 8.3        | 8.6  | 8.6                                                                                 | 120 |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.2  | 6.2  | 6.9  | 6.9        | 7.5  | 7.5                                                                                 | 128 |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.1  | 5.1  | 5.8  | 5.8        | 6.3  | 6.3                                                                                 | 136 |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.2  | 4.2  | 4.7  | 4.7        | 5.1  | 5.1                                                                                 | 144 |
| 152                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.4  | 3.4  | 3.9  | 3.9        | -    | -                                                                                   | 152 |
| 160                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.7  | 2.7  | 3.1  | 3.1        | -    | -                                                                                   | 160 |

|   |           |  181.1 ft |           |           |           |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°   | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°        | 18°       | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |           |           |                                                                                                |         |         |         | ft                                                                                    |     |
| 56                                                                                                                                                                      | 19.6 15.7 | - -                                                                                          | - -       | - -       | - -       | - -                                                                                            | - -     | - -     | - -     | 56                                                                                    | 56  |
| 64                                                                                                                                                                      | 18.4 15.7 | - -                                                                                          | - -       | - -       | 15.8 12.6 | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 15.9 14.8 | - -                                                                                          | - -       | - -       | 14.2 12.6 | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 12.8 12.6 | 14.7 14.2                                                                                    | - -       | 11.1 11.1 | 13.9 -    | - -                                                                                            | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 10.3 10.3 | 12.5 12.4                                                                                    | 12.8 12.0 | 8.8 8.8   | 11.3 11.2 | - -                                                                                            | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 8.3 8.3   | 10.4 10.4                                                                                    | 11.6 11.2 | 6.7 6.7   | 9.0 9.0   | 10.8 10.8                                                                                      | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 6.6 6.6   | 8.4 8.4                                                                                      | 10.1 10.1 | 5.0 5.0   | 7.1 7.1   | 9.1 9.1                                                                                        | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | 5.2 5.2   | 6.8 6.8                                                                                      | 8.3 8.3   | 3.7 3.7   | 5.4 5.4   | 7.2 7.2                                                                                        | - -     | - -     | - -     | 112                                                                                   | 112 |
| 120                                                                                                                                                                     | 3.9 3.9   | 5.4 5.4                                                                                      | 6.7 6.7   | - -       | 4.2 4.2   | 5.6 5.6                                                                                        | - -     | - -     | - -     | 120                                                                                   | 120 |
| 128                                                                                                                                                                     | 2.9 2.9   | 4.2 4.2                                                                                      | 5.5 5.5   | - -       | 3.0 3.0   | 4.4 4.4                                                                                        | - -     | - -     | - -     | 128                                                                                   | 128 |
| 136                                                                                                                                                                     | - -       | 3.1 3.1                                                                                      | 4.3 4.3   | - -       | - -       | 3.2 3.2                                                                                        | - -     | - -     | - -     | 136                                                                                   | 136 |
| 144                                                                                                                                                                     | - -       | - -                                                                                          | 3.1 3.1   | - -       | - -       | - -                                                                                            | - -     | - -     | - -     | 144                                                                                   | 144 |



# HAV

|  77,200 lb +  33,100 lb |                                                                                   |          |  75.5 ft |      |      |  11.5 ft |    |      |  32.2 ft/s  |      |      | 360° |     | ASME B30.5                                                                          |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------------|----|------|----------------------------------------------------------------------------------------------|------|------|------|-----|-------------------------------------------------------------------------------------|--|--|
|                                                                                                                                                                                           |                                                                                   |          |  42.3 ft |      |      |                                                                                           |    |      |  126.0 ft |      |      |      |     |                                                                                     |  |  |
|                                                                                                          |  | 0,3°     | 1°                                                                                        | 0,3° | 1°   | 0,3°                                                                                      | 1° | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°  |  |  |  |
|                                                                                                                                                                                           |                                                                                   | 0°       |                                                                                           | 18°  |      | 36°                                                                                       |    | 0°   |                                                                                              | 18°  |      | 36°  |     |                                                                                     |  |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb |                                                                                           |      |      |                                                                                           |    |      |                                                                                              |      |      |      |     | ft                                                                                  |  |  |
| 18                                                                                                                                                                                        | 32.9                                                                              | -        | -                                                                                         | -    | -    | -                                                                                         | -  | -    | -                                                                                            | -    | -    | -    | -   | 18                                                                                  |  |  |
| 20                                                                                                                                                                                        | 32.1                                                                              | 26.6     | -                                                                                         | -    | -    | -                                                                                         | -  | -    | -                                                                                            | -    | -    | -    | -   | 20                                                                                  |  |  |
| 24                                                                                                                                                                                        | 30.4                                                                              | 25.4     | -                                                                                         | -    | -    | -                                                                                         | -  | -    | -                                                                                            | -    | -    | -    | -   | 24                                                                                  |  |  |
| 28                                                                                                                                                                                        | 28.7                                                                              | 24.2     | -                                                                                         | -    | -    | -                                                                                         | -  | -    | -                                                                                            | -    | -    | -    | -   | 28                                                                                  |  |  |
| 32                                                                                                                                                                                        | 26.8                                                                              | 23.0     | -                                                                                         | -    | -    | -                                                                                         | -  | -    | -                                                                                            | -    | -    | -    | -   | 32                                                                                  |  |  |
| 36                                                                                                                                                                                        | 25.2                                                                              | 21.7     | -                                                                                         | -    | -    | -                                                                                         | -  | -    | -                                                                                            | -    | -    | -    | -   | 36                                                                                  |  |  |
| 40                                                                                                                                                                                        | 23.6                                                                              | 20.6     | 19.0                                                                                      | -    | -    | -                                                                                         | -  | 22.2 | 19.8                                                                                         | -    | -    | -    | -   | 40                                                                                  |  |  |
| 48                                                                                                                                                                                        | 20.9                                                                              | 18.5     | 16.7                                                                                      | 15.6 | -    | -                                                                                         | -  | 21.2 | 19.0                                                                                         | -    | -    | -    | -   | 48                                                                                  |  |  |
| 56                                                                                                                                                                                        | 18.5                                                                              | 16.7     | 14.8                                                                                      | 14.0 | -    | -                                                                                         | -  | 20.3 | 18.2                                                                                         | -    | -    | -    | -   | 56                                                                                  |  |  |
| 64                                                                                                                                                                                        | 16.3                                                                              | 15.1     | 13.3                                                                                      | 12.6 | 10.1 | 9.9                                                                                       | -  | 19.2 | 17.4                                                                                         | 15.0 | -    | -    | -   | 64                                                                                  |  |  |
| 72                                                                                                                                                                                        | 14.6                                                                              | 13.5     | 11.9                                                                                      | 11.5 | 9.3  | 9.1                                                                                       | -  | 17.7 | 16.6                                                                                         | 14.1 | 13.0 | -    | -   | 72                                                                                  |  |  |
| 80                                                                                                                                                                                        | 13.0                                                                              | 12.2     | 10.9                                                                                      | 10.5 | 8.7  | 8.3                                                                                       | -  | 15.2 | 15.2                                                                                         | 13.3 | 12.3 | 9.6  | 9.2 | 80                                                                                  |  |  |
| 88                                                                                                                                                                                        | 11.8                                                                              | 11.1     | 10.1                                                                                      | 9.6  | 8.1  | 7.8                                                                                       | -  | 13.4 | 13.4                                                                                         | 12.5 | 11.7 | 9.2  | 8.7 | 88                                                                                  |  |  |
| 96                                                                                                                                                                                        | 10.8                                                                              | 10.2     | 9.3                                                                                       | 9.0  | 7.7  | 7.4                                                                                       | -  | 11.2 | 11.2                                                                                         | 11.7 | 11.0 | 8.8  | 8.3 | 96                                                                                  |  |  |
| 104                                                                                                                                                                                       | 10.0                                                                              | 9.4      | 8.7                                                                                       | 8.4  | -    | -                                                                                         | -  | 9.9  | 9.9                                                                                          | 10.9 | 10.4 | 8.4  | 8.0 | 104                                                                                 |  |  |
| 112                                                                                                                                                                                       | -                                                                                 | -        | -                                                                                         | -    | -    | -                                                                                         | -  | 8.8  | 8.8                                                                                          | 9.4  | 9.4  | 8.1  | 7.7 | 112                                                                                 |  |  |
| 120                                                                                                                                                                                       | -                                                                                 | -        | -                                                                                         | -    | -    | -                                                                                         | -  | 7.6  | 7.6                                                                                          | 8.1  | 8.1  | 7.9  | 7.4 | 120                                                                                 |  |  |
| 128                                                                                                                                                                                       | -                                                                                 | -        | -                                                                                         | -    | -    | -                                                                                         | -  | 6.4  | 6.4                                                                                          | 7.2  | 7.2  | 7.3  | 7.2 | 128                                                                                 |  |  |
| 136                                                                                                                                                                                       | -                                                                                 | -        | -                                                                                         | -    | -    | -                                                                                         | -  | 5.3  | 5.3                                                                                          | 6.2  | 6.2  | 6.7  | 6.7 | 136                                                                                 |  |  |
| 144                                                                                                                                                                                       | -                                                                                 | -        | -                                                                                         | -    | -    | -                                                                                         | -  | 4.2  | 4.2                                                                                          | 5.1  | 5.1  | 6.0  | 6.0 | 144                                                                                 |  |  |
| 152                                                                                                                                                                                       | -                                                                                 | -        | -                                                                                         | -    | -    | -                                                                                         | -  | 3.4  | 3.4                                                                                          | 4.3  | 4.3  | 4.9  | 4.9 | 152                                                                                 |  |  |
| 160                                                                                                                                                                                       | -                                                                                 | -        | -                                                                                         | -    | -    | -                                                                                         | -  | 2.7  | 2.7                                                                                          | 3.5  | 3.5  | 3.9  | 3.9 | 160                                                                                 |  |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |          |  196.9 ft |     |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°       | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |          | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      |      | 1,000 lb |                                                                                                |     |      |     |      | ft  |                                                                                       |  |
| 64                                                                                  |                                                                                     | 14.4                                                                                         | 11.2 | -    | -    | -    | -        | -                                                                                              | -   | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 14.1                                                                                         | 11.2 | -    | -    | -    | -        | 11.7                                                                                           | 8.8 | -    | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 12.0                                                                                         | 10.9 | -    | -    | -    | -        | 10.2                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 9.6                                                                                          | 9.6  | 11.3 | 10.6 | -    | -        | 8.0                                                                                            | 8.0 | -    | -   | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 7.6                                                                                          | 7.6  | 10.0 | 9.9  | -    | -        | 6.1                                                                                            | 6.1 | 9.0  | -   | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 5.9                                                                                          | 5.9  | 8.4  | 8.4  | 8.2  | -        | 4.4                                                                                            | 4.4 | 7.1  | 7.1 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 4.6                                                                                          | 4.6  | 6.8  | 6.8  | 7.9  | 7.5      | -                                                                                              | -   | 5.4  | 5.4 | 7.6  | 7.2 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 3.5                                                                                          | 3.5  | 5.4  | 5.4  | 7.4  | 7.1      | -                                                                                              | -   | 4.2  | 4.2 | 6.3  | 6.3 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | -                                                                                            | -    | 4.2  | 4.2  | 6.1  | 6.1      | -                                                                                              | -   | 3.1  | 3.1 | 5.0  | 5.0 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | -                                                                                            | -    | 3.1  | 3.1  | 4.9  | 4.9      | -                                                                                              | -   | -    | -   | 3.8  | 3.8 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.8  | 3.8      | -                                                                                              | -   | -    | -   | 2.7  | 2.7 | 144                                                                                   |  |



# HAV

|  55,100 lb +  33,100 lb |                                                                                   |  16.4 ft |       |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |       |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°    | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   | 0,3° | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |       | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°  |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |       |                                                                                           |      |                                                                                              |      |      |      |            |      | ft   |      |                                                                                     |
| 10                                                                                                                                                                                        |                                                                                   | 119.2                                                                                     | 111.6 | 89.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 113.1                                                                                     | 106.0 | 86.0                                                                                      | 82.2 | -                                                                                            | -    | -    | -    | -          | -    | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 107.3                                                                                     | 101.1 | 83.0                                                                                      | 79.5 | -                                                                                            | -    | -    | -    | -          | -    | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 102.0                                                                                     | 96.4  | 80.3                                                                                      | 77.0 | 67.3                                                                                         | 64.9 | -    | -    | -          | -    | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 97.4                                                                                      | 92.4  | 77.9                                                                                      | 74.8 | 65.7                                                                                         | 63.6 | -    | -    | -          | -    | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 92.7                                                                                      | 88.5  | 75.5                                                                                      | 72.7 | 64.1                                                                                         | 62.4 | -    | -    | -          | -    | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 78.1                                                                                      | 78.1  | 71.6                                                                                      | 69.3 | 60.5                                                                                         | 59.4 | -    | -    | -          | -    | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 61.8                                                                                      | 61.8  | 63.5                                                                                      | 62.5 | 57.5                                                                                         | 56.6 | 54.3 | 49.7 | -          | -    | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 50.3                                                                                      | 50.3  | 51.7                                                                                      | 51.7 | 52.1                                                                                         | 51.9 | 48.0 | 44.2 | 48.9       | 43.8 | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 42.6                                                                                      | 42.6  | 43.7                                                                                      | 43.7 | 44.5                                                                                         | 44.5 | 41.8 | 39.4 | 42.4       | 39.9 | 43.9 | 38.7 | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 35.8                                                                                      | 35.8  | 36.7                                                                                      | 36.7 | -                                                                                            | -    | 36.7 | 35.4 | 37.1       | 36.0 | 37.8 | 36.4 | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 28.2 | 28.2 | 29.2       | 29.2 | 29.6 | 29.6 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 22.0 | 22.0 | 22.8       | 22.8 | 23.3 | 23.3 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 17.4 | 17.4 | 18.1       | 18.1 | 18.5 | 18.5 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 14.0 | 14.0 | 14.6       | 14.6 | 14.8 | 14.8 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 11.3 | 11.3 | 11.8       | 11.8 | 12.2 | 12.2 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 9.3  | 9.3  | 9.7        | 9.7  | 9.9  | 9.9  | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 7.4  | 7.4  | 7.8        | 7.8  | 8.1  | 8.1  | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 5.7  | 5.7  | 6.2        | 6.2  | 6.2  | 6.2  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 4.6  | 4.6  | 4.8        | 4.8  | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 3.3  | 3.3  | 3.5        | 3.5  | -    | -    | 120                                                                                 |

|   |           |  181.1 ft |           |           |           |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°   | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°        | 18°       | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |           |           |                                                                                                |         |         |         | ft                                                                                    |     |
| 48                                                                                                                                                                      | 23.5 21.5 | - -                                                                                          | - -       | 21.3 -    | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 48  |
| 56                                                                                                                                                                      | 18.3 17.2 | 19.5 18.3                                                                                    | 20.4 19.1 | 16.4 15.3 | 17.5 -    | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 56  |
| 64                                                                                                                                                                      | 14.4 13.7 | 15.3 14.6                                                                                    | 16.2 15.3 | 12.4 11.9 | 13.5 13.0 | 14.4 13.7                                                                                      | - -     | - -     | - -     | - -                                                                                   | 64  |
| 72                                                                                                                                                                      | 11.1 10.9 | 12.0 11.5                                                                                    | 12.6 12.2 | 9.3 9.3   | 10.2 10.0 | 11.1 10.6                                                                                      | - -     | - -     | - -     | - -                                                                                   | 72  |
| 80                                                                                                                                                                      | 8.4 8.4   | 9.1 9.1                                                                                      | 9.9 9.8   | 6.7 6.7   | 7.6 7.6   | 8.3 8.3                                                                                        | - -     | - -     | - -     | - -                                                                                   | 80  |
| 88                                                                                                                                                                      | 6.2 6.2   | 6.9 6.9                                                                                      | 7.4 7.4   | 4.7 4.7   | 5.4 5.4   | 6.1 6.1                                                                                        | - -     | - -     | - -     | - -                                                                                   | 88  |
| 96                                                                                                                                                                      | 4.5 4.5   | 5.0 5.0                                                                                      | 5.4 5.4   | 2.9 2.9   | 3.6 3.6   | 4.1 4.1                                                                                        | - -     | - -     | - -     | - -                                                                                   | 96  |
| 104                                                                                                                                                                     | 2.8 2.8   | 3.3 3.3                                                                                      | 3.7 3.7   | - -       | - -       | 2.4 2.4                                                                                        | - -     | - -     | - -     | - -                                                                                   | 104 |

# HAV

|  55,100 lb +  33,100 lb |                                                                                   |          |  36.1 ft |      |  11.5 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |
|                                                                                                          |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                           |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 77.9     | 69.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 73.4     | 66.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 69.3     | 62.9                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 65.6     | 59.9                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 62.2     | 57.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 59.1     | 54.5                                                                                      | 44.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 53.6     | 50.1                                                                                      | 41.9 | 39.7                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 49.2     | 46.2                                                                                      | 39.3 | 37.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 45.3     | 42.9                                                                                      | 36.9 | 35.3                                                                                      | 29.0 | 27.8                                                                                         | 45.6 | 39.7 | -    | -          | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 42.0     | 40.1                                                                                      | 34.9 | 33.3                                                                                      | 27.5 | 26.4                                                                                         | 40.4 | 36.5 | -    | -          | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 38.5     | 37.1                                                                                      | 33.0 | 31.5                                                                                      | 26.0 | 24.9                                                                                         | 36.3 | 33.8 | 36.8 | -          | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 29.5     | 29.5                                                                                      | 29.0 | 28.1                                                                                      | 23.5 | 22.7                                                                                         | 28.6 | 27.9 | 29.4 | 27.9       | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 23.3     | 23.3                                                                                      | 24.4 | 24.2                                                                                      | 22.0 | 21.4                                                                                         | 22.8 | 22.7 | 23.4 | 23.3       | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 18.9     | 18.9                                                                                      | 19.4 | 19.4                                                                                      | -    | -                                                                                            | 18.2 | 18.2 | 19.3 | 19.3       | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.6 | 14.6 | 16.0 | 16.0       | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.0 | 12.0 | 13.1 | 13.1       | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.9  | 9.9  | 10.8 | 10.8       | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.1  | 8.1  | 8.9  | 8.9        | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.6  | 6.6  | 7.3  | 7.3        | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.0  | 5.0  | 5.7  | 5.7        | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.9  | 3.9  | 4.5  | 4.5        | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.0  | 3.0  | 3.4  | 3.4        | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.4  | 2.4        | 136                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |     |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |     | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |     | ft   |      |                                                                                       |  |
| 48                                                                                  |                                                                                     | 22.7                                                                                         | -    | -    | -    | -    | -    | -                                                                                              | -    | -    | -   | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 18.4                                                                                         | 16.9 | -    | -    | -    | -    | 16.4                                                                                           | 15.0 | -    | -   | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 14.3                                                                                         | 13.4 | 16.5 | -    | -    | -    | 12.4                                                                                           | 11.8 | -    | -   | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 10.9                                                                                         | 10.6 | 12.9 | 12.4 | 14.6 | -    | 9.1                                                                                            | 9.1  | 11.3 | -   | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 8.3                                                                                          | 8.3  | 10.0 | 10.0 | 11.5 | 11.3 | 6.7                                                                                            | 6.7  | 8.4  | 8.4 | 10.2 | 10.0 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 6.2                                                                                          | 6.2  | 7.7  | 7.7  | 9.1  | 9.0  | 4.7                                                                                            | 4.7  | 6.2  | 6.2 | 7.8  | 7.7  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 4.5                                                                                          | 4.5  | 5.8  | 5.8  | 7.0  | 7.0  | 2.9                                                                                            | 2.9  | 4.3  | 4.3 | 5.6  | 5.6  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 3.0                                                                                          | 3.0  | 4.2  | 4.2  | 5.3  | 5.3  | -                                                                                              | -    | 2.8  | 2.8 | 3.9  | 3.9  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.7  | 3.7  | -                                                                                              | -    | -    | -   | -    | -    | 112                                                                                   |  |

# HAV

|  55,100 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        | 49.3                                                                              | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        | 47.3                                                                              | 41.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        | 45.5                                                                              | 40.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        | 43.6                                                                              | 39.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        | 40.0                                                                              | 36.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        | 36.8                                                                              | 33.8                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        | 34.1                                                                              | 31.5                                                                                      | 26.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        | 31.7                                                                              | 29.5                                                                                      | 24.8 | 23.6                                                                                      | -    | -                                                                                            | 33.9 | 28.3 | -    | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        | 29.5                                                                              | 27.5                                                                                      | 23.4 | 22.3                                                                                      | -    | -                                                                                            | 32.5 | 27.5 | -    | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        | 25.8                                                                              | 24.4                                                                                      | 21.0 | 20.1                                                                                      | 16.1 | 15.5                                                                                         | 28.4 | 24.9 | -    | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        | 22.9                                                                              | 21.7                                                                                      | 18.9 | 17.9                                                                                      | 14.6 | 14.1                                                                                         | 22.6 | 21.3 | 22.0 | 20.7       | -    | 56                                                                                  |     |
| 64                                                                                                                                                                                        | 20.0                                                                              | 19.2                                                                                      | 16.9 | 16.2                                                                                      | 13.4 | 13.0                                                                                         | 18.6 | 18.6 | 19.4 | 18.8       | -    | 64                                                                                  |     |
| 72                                                                                                                                                                                        | 16.8                                                                              | 16.8                                                                                      | 15.5 | 14.8                                                                                      | 12.6 | 12.1                                                                                         | 15.5 | 15.5 | 16.4 | 16.4       | 14.3 | 72                                                                                  |     |
| 80                                                                                                                                                                                        | 14.2                                                                              | 14.2                                                                                      | 14.1 | 13.8                                                                                      | -    | -                                                                                            | 12.7 | 12.7 | 14.0 | 14.0       | 13.6 | 80                                                                                  |     |
| 88                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.6 | 10.6 | 11.8 | 11.8       | 12.4 | 88                                                                                  |     |
| 96                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.9  | 8.9  | 10.0 | 10.0       | 10.9 | 96                                                                                  |     |
| 104                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.3  | 7.3  | 8.4  | 8.4        | 9.2  | 104                                                                                 |     |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.9  | 5.9  | 7.0  | 7.0        | 7.6  | 112                                                                                 |     |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.6  | 4.6  | 5.6  | 5.6        | 6.3  | 120                                                                                 |     |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.6  | 3.6  | 4.4  | 4.4        | 5.1  | 128                                                                                 |     |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.7  | 2.7  | 3.3  | 3.3        | 3.8  | 136                                                                                 |     |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.5  | 2.5        | 2.9  | 144                                                                                 |     |

|  |  |  181.1 ft |      |      |      |      |          |  196.9 ft |      |      |     |     |     |  |      |     |    |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------------------------------------------------------------------------------------------------|------|------|-----|-----|-----|---------------------------------------------------------------------------------------|------|-----|----|--|
|                                                                                     |                                                                                     | 0,3°                                                                                         |      | 1°   |      | 0,3° |          | 1°                                                                                             |      | 0,3° |     | 1°  |     |                                                                                       | 0,3° |     | 1° |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |          | 0°                                                                                             |      | 18°  |     | 36° |     |                                                                                       |      |     |    |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      |      | 1,000 lb |                                                                                                |      |      |     |     |     |                                                                                       | ft   |     |    |  |
| 56                                                                                  |                                                                                     | 17.4                                                                                         | 15.2 | -    | -    | -    | -        | -                                                                                              | -    | -    | -   | -   | -   | -                                                                                     | -    | 56  |    |  |
| 64                                                                                  |                                                                                     | 14.0                                                                                         | 13.4 | -    | -    | -    | -        | 12.2                                                                                           | 11.4 | -    | -   | -   | -   | -                                                                                     | -    | 64  |    |  |
| 72                                                                                  |                                                                                     | 10.7                                                                                         | 10.6 | -    | -    | -    | -        | 8.9                                                                                            | 8.9  | -    | -   | -   | -   | -                                                                                     | -    | 72  |    |  |
| 80                                                                                  |                                                                                     | 8.3                                                                                          | 8.3  | 10.9 | 10.7 | -    | -        | 6.5                                                                                            | 6.5  | 9.3  | -   | -   | -   | -                                                                                     | -    | 80  |    |  |
| 88                                                                                  |                                                                                     | 6.2                                                                                          | 6.2  | 8.5  | 8.5  | 10.6 | 10.5     | 4.5                                                                                            | 4.5  | 7.1  | 7.1 | -   | -   | -                                                                                     | -    | 88  |    |  |
| 96                                                                                  |                                                                                     | 4.5                                                                                          | 4.5  | 6.5  | 6.5  | 8.5  | 8.5      | 2.9                                                                                            | 2.9  | 5.2  | 5.2 | 7.3 | 7.3 | -                                                                                     | -    | 96  |    |  |
| 104                                                                                 |                                                                                     | 3.0                                                                                          | 3.0  | 4.8  | 4.8  | 6.6  | 6.6      | -                                                                                              | -    | 3.5  | 3.5 | 5.5 | 5.5 | -                                                                                     | -    | 104 |    |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5  | 5.0  | 5.0      | -                                                                                              | -    | -    | -   | 3.9 | 3.9 | -                                                                                     | -    | 112 |    |  |
| 120                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.7  | 3.7      | -                                                                                              | -    | -    | -   | -   | -   | -                                                                                     | -    | 120 |    |  |





# HAV

|  55,100 lb +  33,100 lb |                                                                                   |      |  75.5 ft |      |  11.5 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-----|
|                                                                                                                                                                                           |                                                                                   |      |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |      |     |
|                                                                                                          |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°  |
|                                                                                                                                                                                           |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            | 36°  |     |
| ft                                                                                                                                                                                        |                                                                                   |      |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft   |     |
| 18                                                                                                                                                                                        |                                                                                   | 32.9 | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 18  |
| 20                                                                                                                                                                                        |                                                                                   | 32.1 | 26.6                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 20  |
| 24                                                                                                                                                                                        |                                                                                   | 30.4 | 25.4                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 24  |
| 28                                                                                                                                                                                        |                                                                                   | 28.7 | 24.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 28  |
| 32                                                                                                                                                                                        |                                                                                   | 26.8 | 23.0                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 32  |
| 36                                                                                                                                                                                        |                                                                                   | 25.2 | 21.7                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 36  |
| 40                                                                                                                                                                                        |                                                                                   | 23.6 | 20.6                                                                                      | 19.0 | -                                                                                         | -        | -                                                                                            | 22.2 | 19.8 | -    | -          | -    | 40  |
| 48                                                                                                                                                                                        |                                                                                   | 20.9 | 18.5                                                                                      | 16.7 | 15.6                                                                                      | -        | -                                                                                            | 21.2 | 19.0 | -    | -          | -    | 48  |
| 56                                                                                                                                                                                        |                                                                                   | 18.5 | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -        | -                                                                                            | 19.8 | 17.7 | -    | -          | -    | 56  |
| 64                                                                                                                                                                                        |                                                                                   | 16.3 | 15.1                                                                                      | 13.3 | 12.6                                                                                      | 10.1     | 9.9                                                                                          | 17.6 | 16.7 | 15.0 | -          | -    | 64  |
| 72                                                                                                                                                                                        |                                                                                   | 14.6 | 13.5                                                                                      | 11.9 | 11.5                                                                                      | 9.3      | 9.1                                                                                          | 15.2 | 15.0 | 14.1 | 13.0       | -    | 72  |
| 80                                                                                                                                                                                        |                                                                                   | 13.0 | 12.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7      | 8.3                                                                                          | 12.7 | 12.7 | 13.1 | 12.2       | 9.6  | 80  |
| 88                                                                                                                                                                                        |                                                                                   | 11.8 | 11.1                                                                                      | 10.1 | 9.6                                                                                       | 8.1      | 7.8                                                                                          | 10.5 | 10.5 | 11.8 | 11.3       | 9.2  | 88  |
| 96                                                                                                                                                                                        |                                                                                   | 10.7 | 10.2                                                                                      | 9.3  | 9.0                                                                                       | 7.7      | 7.4                                                                                          | 8.6  | 8.6  | 10.2 | 10.2       | 8.8  | 96  |
| 104                                                                                                                                                                                       |                                                                                   | 9.4  | 9.4                                                                                       | 8.7  | 8.4                                                                                       | -        | -                                                                                            | 7.2  | 7.2  | 8.8  | 8.8        | 8.4  | 104 |
| 112                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.9  | 5.9  | 7.4  | 7.4        | 7.9  | 112 |
| 120                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 4.8  | 4.8  | 6.1  | 6.1        | 7.2  | 120 |
| 128                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.7  | 3.7  | 4.8  | 4.8        | 5.9  | 128 |
| 136                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 2.8  | 2.8  | 3.9  | 3.9        | 4.7  | 136 |
| 144                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | -    | -    | 2.9  | 2.9        | 3.6  | 144 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |          |     |  196.9 ft |     |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|----------|-----|------------------------------------------------------------------------------------------------|-----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3°     | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°      |     | 0°                                                                                             |     | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |     | 1,000 lb |     |                                                                                                |     |      |    |      |    | ft                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.5                                                                                         | 11.2 | -    | -   | -        | -   | -                                                                                              | -   | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 9.8                                                                                          | 9.7  | -    | -   | -        | -   | 8.0                                                                                            | 8.0 | -    | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 7.4                                                                                          | 7.4  | -    | -   | -        | -   | 5.7                                                                                            | 5.7 | -    | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 5.4                                                                                          | 5.4  | 8.4  | 8.4 | -        | -   | 3.9                                                                                            | 3.9 | -    | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 3.8                                                                                          | 3.8  | 6.5  | 6.5 | -        | -   | -                                                                                              | -   | 5.2  | -  | -    | -  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 2.4                                                                                          | 2.4  | 4.8  | 4.8 | 7.3      | -   | -                                                                                              | -   | 3.5  | -  | -    | -  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5 | 5.7      | 5.7 | -                                                                                              | -   | -    | -  | 4.6  | -  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 4.3      | 4.3 | -                                                                                              | -   | -    | -  | 3.3  | -  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 3.1      | 3.1 | -                                                                                              | -   | -    | -  | -    | -  | 128                                                                                   |  |

# HAV

|  33,100 lb +  33,100 lb |             |  16.4 ft |           |  11.5 ft    |           |  32.2 ft/s |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |             |  42.3 ft |           |  126.0 ft |           |                                                                                             |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |             | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                     | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |             | 18°                                                                                       | 36°       | 0°                                                                                           | 18°       | 36°                                                                                         | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |             |                                                                                           |           | 1,000 lb                                                                                     |           |                                                                                             |         |         |         | ft         |     |
| 10                                                                                                                                                                                        | 119.2 111.6 | 89.3 -                                                                                    | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 10  |
| 12                                                                                                                                                                                        | 113.1 106.0 | 86.0 82.2                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 12  |
| 14                                                                                                                                                                                        | 107.3 101.1 | 83.0 79.5                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 14  |
| 16                                                                                                                                                                                        | 102.0 96.4  | 80.3 77.0                                                                                 | 67.3 64.9 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 16  |
| 18                                                                                                                                                                                        | 93.6 90.0   | 77.9 74.8                                                                                 | 65.7 63.6 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 18  |
| 20                                                                                                                                                                                        | 83.9 82.5   | 75.2 72.6                                                                                 | 64.1 62.4 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 20  |
| 24                                                                                                                                                                                        | 62.8 62.8   | 65.3 65.3                                                                                 | 60.2 59.4 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 24  |
| 28                                                                                                                                                                                        | 49.3 49.3   | 51.2 51.2                                                                                 | 52.6 52.6 | 45.5 40.6                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 28  |
| 32                                                                                                                                                                                        | 39.8 39.8   | 41.3 41.3                                                                                 | 42.4 42.4 | 39.3 35.2                                                                                    | 40.8 33.9 | - -                                                                                         | - -     | - -     | - -     | - -        | 32  |
| 36                                                                                                                                                                                        | 33.4 33.4   | 34.5 34.5                                                                                 | 35.3 35.3 | 34.2 31.0                                                                                    | 35.5 32.4 | 35.7 31.2                                                                                   | - -     | - -     | - -     | - -        | 36  |
| 40                                                                                                                                                                                        | 27.8 27.8   | 28.7 28.7                                                                                 | - -       | 29.3 27.1                                                                                    | 30.4 28.4 | 31.5 29.5                                                                                   | - -     | - -     | - -     | - -        | 40  |
| 48                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 21.7 21.2                                                                                    | 22.7 22.2 | 23.5 23.2                                                                                   | - -     | - -     | - -     | - -        | 48  |
| 56                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 16.5 16.5                                                                                    | 17.3 17.3 | 17.9 17.9                                                                                   | - -     | - -     | - -     | - -        | 56  |
| 64                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 12.8 12.8                                                                                    | 13.5 13.5 | 13.9 13.9                                                                                   | - -     | - -     | - -     | - -        | 64  |
| 72                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 10.0 10.0                                                                                    | 10.4 10.4 | 10.9 10.9                                                                                   | - -     | - -     | - -     | - -        | 72  |
| 80                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 7.6 7.6                                                                                      | 8.0 8.0   | 8.5 8.5                                                                                     | - -     | - -     | - -     | - -        | 80  |
| 88                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 5.6 5.6                                                                                      | 6.0 6.0   | 6.4 6.4                                                                                     | - -     | - -     | - -     | - -        | 88  |
| 96                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 4.0 4.0                                                                                      | 4.4 4.4   | 4.7 4.7                                                                                     | - -     | - -     | - -     | - -        | 96  |
| 104                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 2.6 2.6                                                                                      | 3.0 3.0   | 3.1 3.1                                                                                     | - -     | - -     | - -     | - -        | 104 |

|   |           |  181.1 ft |           |  196.9 ft |         |         |         |         |         |     |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|-----|----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |    |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°                                                                                             | 18°     | 36°     | 0°      | 18°     | 36°     |     |    |
| ft                                                                                                                                                                      |           |                                                                                              |           | 1,000 lb                                                                                       |         |         |         |         |         | ft  |    |
| 48                                                                                                                                                                      | 16.2 15.1 | - -                                                                                          | - -       | 14.1 -                                                                                         | - -     | - -     | - -     | - -     | - -     | - - | 48 |
| 56                                                                                                                                                                      | 12.0 11.4 | 13.1 12.5                                                                                    | 14.1 13.3 | 10.2 9.7                                                                                       | 11.4 -  | - -     | - -     | - -     | - -     | - - | 56 |
| 64                                                                                                                                                                      | 8.8 8.5   | 9.7 9.4                                                                                      | 10.4 10.1 | 7.0 6.9                                                                                        | 7.9 7.8 | 8.8 8.7 | - -     | - -     | - -     | - - | 64 |
| 72                                                                                                                                                                      | 6.0 6.0   | 6.9 6.9                                                                                      | 7.6 7.5   | 4.2 4.2                                                                                        | 5.3 5.3 | 6.0 6.0 | - -     | - -     | - -     | - - | 72 |
| 80                                                                                                                                                                      | 3.9 3.9   | 4.6 4.6                                                                                      | 5.2 5.2   | - -                                                                                            | - -     | 3.7 3.7 | - -     | - -     | - -     | - - | 80 |
| 88                                                                                                                                                                      | - -       | - -                                                                                          | 3.3 3.3   | - -                                                                                            | - -     | - -     | - -     | - -     | - -     | - - | 88 |



# HAV

|  33,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 59.1                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 53.6                                                                                      | 50.1 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 49.2                                                                                      | 46.2 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 42.6                                                                                      | 41.9 | 36.9                                                                                      | 35.3 | 29.0                                                                                         | 27.8 | 37.5 | 31.1 | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 36.2                                                                                      | 36.2 | 34.9                                                                                      | 33.3 | 27.5                                                                                         | 26.4 | 33.6 | 30.0 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 30.5                                                                                      | 30.5 | 32.6                                                                                      | 31.2 | 26.0                                                                                         | 24.9 | 29.4 | 26.4 | 28.3       | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 23.0                                                                                      | 23.0 | 24.4                                                                                      | 24.4 | 23.4                                                                                         | 22.7 | 22.5 | 20.9 | 24.0       | 23.2 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 18.0                                                                                      | 18.0 | 18.9                                                                                      | 18.9 | 19.8                                                                                         | 19.7 | 17.3 | 16.9 | 18.9       | 18.6 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 14.2                                                                                      | 14.2 | 14.9                                                                                      | 14.9 | -                                                                                            | -    | 13.5 | 13.4 | 14.9       | 14.9 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.6 | 10.6 | 11.7       | 11.7 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.3  | 8.3  | 9.4        | 9.4  | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.4  | 6.4  | 7.4        | 7.4  | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.7  | 4.7  | 5.6        | 5.6  | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.4  | 3.4  | 4.1        | 4.1  | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 112                                                                                 |     |

|   |           |  181.1 ft |         |          |         |  196.9 ft |         |         |         |  |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|----------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1°  | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |    |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°     | 0°       | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |    |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |         |          |         |                                                                                                |         |         |         | ft                                                                                    |    |
| 48                                                                                                                                                                      | 16.3 -    | - -                                                                                          | - -     | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 48 |
| 56                                                                                                                                                                      | 12.1 11.3 | - -                                                                                          | - -     | 10.1 9.5 | - -     | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 56 |
| 64                                                                                                                                                                      | 8.6 8.5   | 10.8 -                                                                                       | - -     | 6.8 6.7  | - -     | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 64 |
| 72                                                                                                                                                                      | 5.8 5.8   | 7.8 7.8                                                                                      | 9.6 -   | 4.0 4.0  | 6.2 -   | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 72 |
| 80                                                                                                                                                                      | 3.7 3.7   | 5.4 5.4                                                                                      | 7.1 6.9 | - -      | 3.9 -   | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 80 |
| 88                                                                                                                                                                      | - -       | 3.6 3.6                                                                                      | 4.9 4.9 | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 88 |
| 96                                                                                                                                                                      | - -       | - -                                                                                          | 3.1 3.1 | - -      | - -     | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 96 |

# HAV

|  33,100 lb +  33,100 lb |           |  55.8 ft |           |  11.5 ft    |           |  32.2 ft/s |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |           |  42.3 ft |           |  126.0 ft |           |                                                                                             |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |           | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                     | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |           | 18°                                                                                       | 36°       | 0°                                                                                           | 18°       | 36°                                                                                         | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |           |                                                                                           |           | 1,000 lb                                                                                     |           |                                                                                             |         |         |         | ft         |     |
| 14                                                                                                                                                                                        | 49.3 -    | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 14  |
| 16                                                                                                                                                                                        | 47.3 41.7 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 16  |
| 18                                                                                                                                                                                        | 45.5 40.4 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 18  |
| 20                                                                                                                                                                                        | 43.6 39.0 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 20  |
| 24                                                                                                                                                                                        | 40.0 36.3 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 24  |
| 28                                                                                                                                                                                        | 36.8 33.8 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 28  |
| 32                                                                                                                                                                                        | 34.1 31.5 | 26.4 -                                                                                    | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 32  |
| 36                                                                                                                                                                                        | 31.7 29.5 | 24.8 23.6                                                                                 | - -       | 30.3 25.0                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 36  |
| 40                                                                                                                                                                                        | 29.4 27.5 | 23.4 22.3                                                                                 | - -       | 27.5 24.6                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 40  |
| 48                                                                                                                                                                                        | 24.6 24.0 | 21.0 20.1                                                                                 | 16.1 15.5 | 22.9 20.6                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 48  |
| 56                                                                                                                                                                                        | 19.4 19.4 | 18.9 17.9                                                                                 | 14.6 14.1 | 18.0 16.8                                                                                    | 19.7 18.2 | - -                                                                                         | - -     | - -     | - -     | - -        | 56  |
| 64                                                                                                                                                                                        | 15.5 15.5 | 16.6 16.2                                                                                 | 13.4 13.0 | 14.0 13.6                                                                                    | 16.0 15.8 | - -                                                                                         | - -     | - -     | - -     | - -        | 64  |
| 72                                                                                                                                                                                        | 12.6 12.6 | 13.7 13.7                                                                                 | 12.6 12.1 | 11.1 11.1                                                                                    | 13.1 13.1 | 13.9 13.5                                                                                   | - -     | - -     | - -     | - -        | 72  |
| 80                                                                                                                                                                                        | 10.5 10.5 | 11.1 11.1                                                                                 | - -       | 8.7 8.7                                                                                      | 10.5 10.5 | 11.8 11.8                                                                                   | - -     | - -     | - -     | - -        | 80  |
| 88                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 7.0 7.0                                                                                      | 8.6 8.6   | 9.7 9.7                                                                                     | - -     | - -     | - -     | - -        | 88  |
| 96                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 5.5 5.5                                                                                      | 6.9 6.9   | 8.0 8.0                                                                                     | - -     | - -     | - -     | - -        | 96  |
| 104                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 4.1 4.1                                                                                      | 5.3 5.3   | 6.4 6.4                                                                                     | - -     | - -     | - -     | - -        | 104 |
| 112                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | 4.1 4.1   | 5.0 5.0                                                                                     | - -     | - -     | - -     | - -        | 112 |
| 120                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | 2.8 2.8   | 3.7 3.7                                                                                     | - -     | - -     | - -     | - -        | 120 |

|   |           |  181.1 ft |         |  196.9 ft |         |         |         |         |         |     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|-----|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°     | 0°                                                                                             | 18°     | 36°     | 0°      | 18°     | 36°     |     |     |
| ft                                                                                                                                                                      |           |                                                                                              |         | 1,000 lb                                                                                       |         |         |         |         |         | ft  |     |
| 56                                                                                                                                                                      | 11.7 11.0 | - -                                                                                          | - -     | - -                                                                                            | - -     | - -     | - -     | - -     | - -     | - - | 56  |
| 64                                                                                                                                                                      | 8.3 8.3   | - -                                                                                          | - -     | 6.3 6.3                                                                                        | - -     | - -     | - -     | - -     | - -     | - - | 64  |
| 72                                                                                                                                                                      | 5.8 5.8   | - -                                                                                          | - -     | 4.0 4.0                                                                                        | - -     | - -     | - -     | - -     | - -     | - - | 72  |
| 80                                                                                                                                                                      | 3.7 3.7   | 6.3 6.3                                                                                      | - -     | - -                                                                                            | - -     | - -     | - -     | - -     | - -     | - - | 80  |
| 88                                                                                                                                                                      | - -       | 4.3 4.3                                                                                      | 6.6 6.6 | - -                                                                                            | - -     | - -     | - -     | - -     | - -     | - - | 88  |
| 96                                                                                                                                                                      | - -       | 2.8 2.8                                                                                      | 4.7 4.7 | - -                                                                                            | - -     | - -     | - -     | - -     | - -     | - - | 96  |
| 104                                                                                                                                                                     | - -       | - -                                                                                          | 3.3 3.3 | - -                                                                                            | - -     | - -     | - -     | - -     | - -     | - - | 104 |

# HAV

|  33,100 lb +  33,100 lb |      |  75.5 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360°    |      | ASME B30.5 |     |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|---------|------|------------|-----|----|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |         |      |            |     |    |
| 0,3° 1°                                                                                                                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                      |      | 0,3° 1° |      | 0,3° 1°    |     |    |
| 0°                                                                                                                                                                                        |      | 18°                                                                                       |      | 36°                                                                                       |      | 0°                                                                                           |      | 18°     |      | 36°        |     |    |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |         |      |            |     | ft |
| 18                                                                                                                                                                                        | 32.9 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | 18  |    |
| 20                                                                                                                                                                                        | 32.1 | 26.6                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | 20  |    |
| 24                                                                                                                                                                                        | 30.4 | 25.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | 24  |    |
| 28                                                                                                                                                                                        | 28.7 | 24.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | 28  |    |
| 32                                                                                                                                                                                        | 26.8 | 23.0                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | 32  |    |
| 36                                                                                                                                                                                        | 25.2 | 21.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | 36  |    |
| 40                                                                                                                                                                                        | 23.6 | 20.6                                                                                      | 19.0 | -                                                                                         | -    | -                                                                                            | 22.0 | 19.6    | -    | -          | 40  |    |
| 48                                                                                                                                                                                        | 20.9 | 18.5                                                                                      | 16.7 | 15.6                                                                                      | -    | -                                                                                            | 19.8 | 17.8    | -    | -          | 48  |    |
| 56                                                                                                                                                                                        | 18.5 | 16.7                                                                                      | 14.8 | 14.0                                                                                      | -    | -                                                                                            | 17.0 | 15.8    | -    | -          | 56  |    |
| 64                                                                                                                                                                                        | 16.1 | 15.1                                                                                      | 13.3 | 12.6                                                                                      | 10.1 | 9.9                                                                                          | 13.3 | 13.2    | 14.0 | -          | 64  |    |
| 72                                                                                                                                                                                        | 13.3 | 13.3                                                                                      | 11.9 | 11.5                                                                                      | 9.3  | 9.1                                                                                          | 10.4 | 10.4    | 13.0 | 12.6       | 72  |    |
| 80                                                                                                                                                                                        | 11.2 | 11.2                                                                                      | 10.9 | 10.5                                                                                      | 8.7  | 8.3                                                                                          | 8.1  | 8.1     | 10.7 | 10.7       | 80  |    |
| 88                                                                                                                                                                                        | 9.4  | 9.4                                                                                       | 10.0 | 9.6                                                                                       | 8.1  | 7.8                                                                                          | 6.4  | 6.4     | 8.6  | 8.6        | 88  |    |
| 96                                                                                                                                                                                        | 7.9  | 7.9                                                                                       | 8.6  | 8.6                                                                                       | 7.7  | 7.4                                                                                          | 5.0  | 5.0     | 6.9  | 6.9        | 96  |    |
| 104                                                                                                                                                                                       | 6.7  | 6.7                                                                                       | 7.2  | 7.2                                                                                       | -    | -                                                                                            | 3.7  | 3.7     | 5.5  | 5.5        | 104 |    |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -       | 4.3  | 4.3        | 112 |    |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -       | 3.3  | 3.3        | 120 |    |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | 128 |    |

|                                                                                   |  |                                                                                   |  |  181.1 ft |    |      |    |      |    |  196.9 ft |    |      |    |      |    |                                                                                     |  |
|-----------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------|----|------|----|------|----|----------------------------------------------------------------------------------------------|----|------|----|------|----|-------------------------------------------------------------------------------------|--|
|  |  |  |  | 0,3°                                                                                       | 1° | 0,3° | 1° | 0,3° | 1° | 0,3°                                                                                         | 1° | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                   |  |                                                                                   |  | 0°                                                                                         |    | 18°  |    | 36°  |    | 0°                                                                                           |    | 18°  |    | 36°  |    |                                                                                     |  |
| ft                                                                                |  |                                                                                   |  | 1,000 lb                                                                                   |    |      |    |      |    |                                                                                              |    |      |    |      |    | ft                                                                                  |  |
| 64                                                                                |  | 7.2                                                                               |  | 7.2                                                                                        | -  | -    | -  | -    | -  | -                                                                                            | -  | -    | -  | -    | -  | 64                                                                                  |  |
| 72                                                                                |  | 4.7                                                                               |  | 4.7                                                                                        | -  | -    | -  | -    | -  | -                                                                                            | -  | -    | -  | -    | -  | 72                                                                                  |  |

# HAV

|  11,000 lb +  33,100 lb |                                                                                   |  16.4 ft |       |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |       |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°    | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |       | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |       |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 119.2                                                                                     | 111.6 | 89.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 113.1                                                                                     | 105.8 | 86.0                                                                                      | 82.2 | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 104.4                                                                                     | 95.5  | 83.0                                                                                      | 79.5 | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 90.5                                                                                      | 81.9  | 80.3                                                                                      | 77.0 | 67.3                                                                                         | 64.9 | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 76.9                                                                                      | 71.9  | 74.6                                                                                      | 72.1 | 65.7                                                                                         | 63.6 | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 64.3                                                                                      | 62.7  | 67.5                                                                                      | 66.1 | 63.5                                                                                         | 61.9 | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 47.6                                                                                      | 47.6  | 50.0                                                                                      | 50.0 | 52.0                                                                                         | 52.0 | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 36.9                                                                                      | 36.9  | 38.6                                                                                      | 38.6 | 40.1                                                                                         | 40.1 | 33.7 | 29.6 | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 29.4                                                                                      | 29.4  | 30.7                                                                                      | 30.7 | 31.7                                                                                         | 31.7 | 28.4 | 25.3 | 30.1       | 24.2 | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 24.2                                                                                      | 24.2  | 25.4                                                                                      | 25.4 | 26.0                                                                                         | 26.0 | 24.3 | 21.9 | 25.9       | 23.3 | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 19.8                                                                                      | 19.8  | 20.6                                                                                      | 20.6 | -                                                                                            | -    | 20.7 | 18.8 | 22.0       | 20.1 | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 15.1 | 14.2 | 16.2       | 15.3 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 11.0 | 10.6 | 11.8       | 11.6 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 7.9  | 7.8  | 8.7        | 8.7  | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 5.3  | 5.3  | 6.0        | 6.0  | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 3.5  | 3.5  | 3.9        | 3.9  | 80                                                                                  |     |

[illegible]

# HAV

|  11,000 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  11.5 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 77.9                                                                                      | 69.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 73.4                                                                                      | 66.0 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 69.3                                                                                      | 62.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 65.6                                                                                      | 59.9 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 62.2                                                                                      | 57.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 59.0                                                                                      | 54.5 | 44.9                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 51.2                                                                                      | 48.9 | 41.9                                                                                      | 39.7 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 40.1                                                                                      | 40.1 | 39.3                                                                                      | 37.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 32.3                                                                                      | 32.3 | 34.9                                                                                      | 34.4 | 29.0                                                                                         | 27.8 | 27.2 | 21.9 | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 27.0                                                                                      | 27.0 | 29.5                                                                                      | 29.5 | 27.5                                                                                         | 26.4 | 24.0 | 21.3 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 22.4                                                                                      | 22.4 | 24.6                                                                                      | 24.6 | 25.7                                                                                         | 24.7 | 20.5 | 18.4 | 22.7       | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 16.5                                                                                      | 16.5 | 18.1                                                                                      | 18.1 | 19.3                                                                                         | 19.3 | 15.4 | 14.1 | 17.8       | 16.2 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 12.4                                                                                      | 12.4 | 13.4                                                                                      | 13.4 | 14.2                                                                                         | 14.2 | 11.4 | 10.8 | 13.4       | 12.5 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 9.5                                                                                       | 9.5  | 10.1                                                                                      | 10.1 | -                                                                                            | -    | 8.3  | 8.0  | 10.1       | 9.6  | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.8  | 5.8  | 7.3        | 7.3  | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.0  | 4.0  | 5.3        | 5.3  | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | 3.6        | 3.6  | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 96                                                                                  |

|                                                                                                                                                                         |  |  181.1 ft |    |      |    |      |    |  196.9 ft |    |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------|----|------|----|------|----|-----------------------------------------------------------------------------------------------|----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|   |  | 0,3°                                                                                        | 1° | 0,3° | 1° | 0,3° | 1° | 0,3°                                                                                          | 1° | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                                                                                                         |  | 0°                                                                                          |    | 18°  |    | 36°  |    | 0°                                                                                            |    | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                                                                                                      |  | 1,000 lb                                                                                    |    |      |    |      |    |                                                                                               |    |      |    |      |    | ft                                                                                    |  |
| 48                                                                                                                                                                      |  | 9.1                                                                                         | -  | -    | -  | -    | -  | -                                                                                             | -  | -    | -  | -    | -  | 48                                                                                    |  |
| 56                                                                                                                                                                      |  | 5.5                                                                                         | -  | -    | -  | -    | -  | -                                                                                             | -  | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                                                                                                      |  | 2.9                                                                                         | -  | -    | -  | -    | -  | -                                                                                             | -  | -    | -  | -    | -  | 64                                                                                    |  |

|  11,000 lb +  33,100 lb |                                                                                     |  55.8 ft |      |  11.5 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                       |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------|------|------|------|------------|------|---------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                               |                                                                                     |  42.3 ft |      |                                                                                             |      |  126.0 ft |      |      |      |            |      |                                                                                       |     |
|                                                                                                            |  | 0,3°                                                                                        | 1°   | 0,3°                                                                                        | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                               |                                                                                     | 0°                                                                                          |      | 18°                                                                                         |      | 36°                                                                                            |      | 0°   |      | 18°        |      |                                                                                       | 36° |
| ft                                                                                                                                                                                            |                                                                                     | 1,000 lb                                                                                    |      |                                                                                             |      |                                                                                                |      |      |      |            |      | ft                                                                                    |     |
| 14                                                                                                                                                                                            |                                                                                     | 49.3                                                                                        | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -    | 14                                                                                    |     |
| 16                                                                                                                                                                                            |                                                                                     | 47.3                                                                                        | 41.7 | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -    | 16                                                                                    |     |
| 18                                                                                                                                                                                            |                                                                                     | 45.5                                                                                        | 40.4 | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -    | 18                                                                                    |     |
| 20                                                                                                                                                                                            |                                                                                     | 43.6                                                                                        | 39.0 | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -    | 20                                                                                    |     |
| 24                                                                                                                                                                                            |                                                                                     | 40.0                                                                                        | 36.3 | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -    | 24                                                                                    |     |
| 28                                                                                                                                                                                            |                                                                                     | 36.8                                                                                        | 33.8 | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -    | 28                                                                                    |     |
| 32                                                                                                                                                                                            |                                                                                     | 33.6                                                                                        | 31.5 | 26.4                                                                                        | -    | -                                                                                              | -    | -    | -    | -          | -    | 32                                                                                    |     |
| 36                                                                                                                                                                                            |                                                                                     | 28.9                                                                                        | 28.0 | 24.8                                                                                        | 23.6 | -                                                                                              | -    | 21.1 | -    | -          | -    | 36                                                                                    |     |
| 40                                                                                                                                                                                            |                                                                                     | 24.2                                                                                        | 24.2 | 23.4                                                                                        | 22.3 | -                                                                                              | -    | 20.5 | 18.0 | -          | -    | 40                                                                                    |     |
| 48                                                                                                                                                                                            |                                                                                     | 18.2                                                                                        | 18.2 | 20.3                                                                                        | 19.7 | 16.1                                                                                           | 15.5 | 15.4 | 13.9 | -          | -    | 48                                                                                    |     |
| 56                                                                                                                                                                                            |                                                                                     | 13.9                                                                                        | 13.9 | 15.6                                                                                        | 15.6 | 14.6                                                                                           | 14.1 | 11.3 | 10.7 | 14.3       | 12.9 | 56                                                                                    |     |
| 64                                                                                                                                                                                            |                                                                                     | 10.9                                                                                        | 10.9 | 12.1                                                                                        | 12.1 | 13.1                                                                                           | 13.0 | 8.3  | 8.2  | 10.8       | 10.5 | 64                                                                                    |     |
| 72                                                                                                                                                                                            |                                                                                     | 8.6                                                                                         | 8.6  | 9.5                                                                                         | 9.5  | 10.4                                                                                           | 10.4 | 6.0  | 6.0  | 8.2        | 8.2  | 72                                                                                    |     |
| 80                                                                                                                                                                                            |                                                                                     | 6.8                                                                                         | 6.8  | 7.5                                                                                         | 7.5  | -                                                                                              | -    | 4.2  | 4.2  | 6.1        | 6.1  | 80                                                                                    |     |
| 88                                                                                                                                                                                            |                                                                                     | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | 4.5        | 4.5  | 88                                                                                    |     |
| 96                                                                                                                                                                                            |                                                                                     | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | 3.1        | 3.1  | 96                                                                                    |     |
| 104                                                                                                                                                                                           |                                                                                     | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | -          | -    | 104                                                                                   |     |
|                                                                                                                                                                                               |                                                                                     | -                                                                                           | -    | -                                                                                           | -    | -                                                                                              | -    | -    | -    | 3.2        | 3.2  |                                                                                       |     |



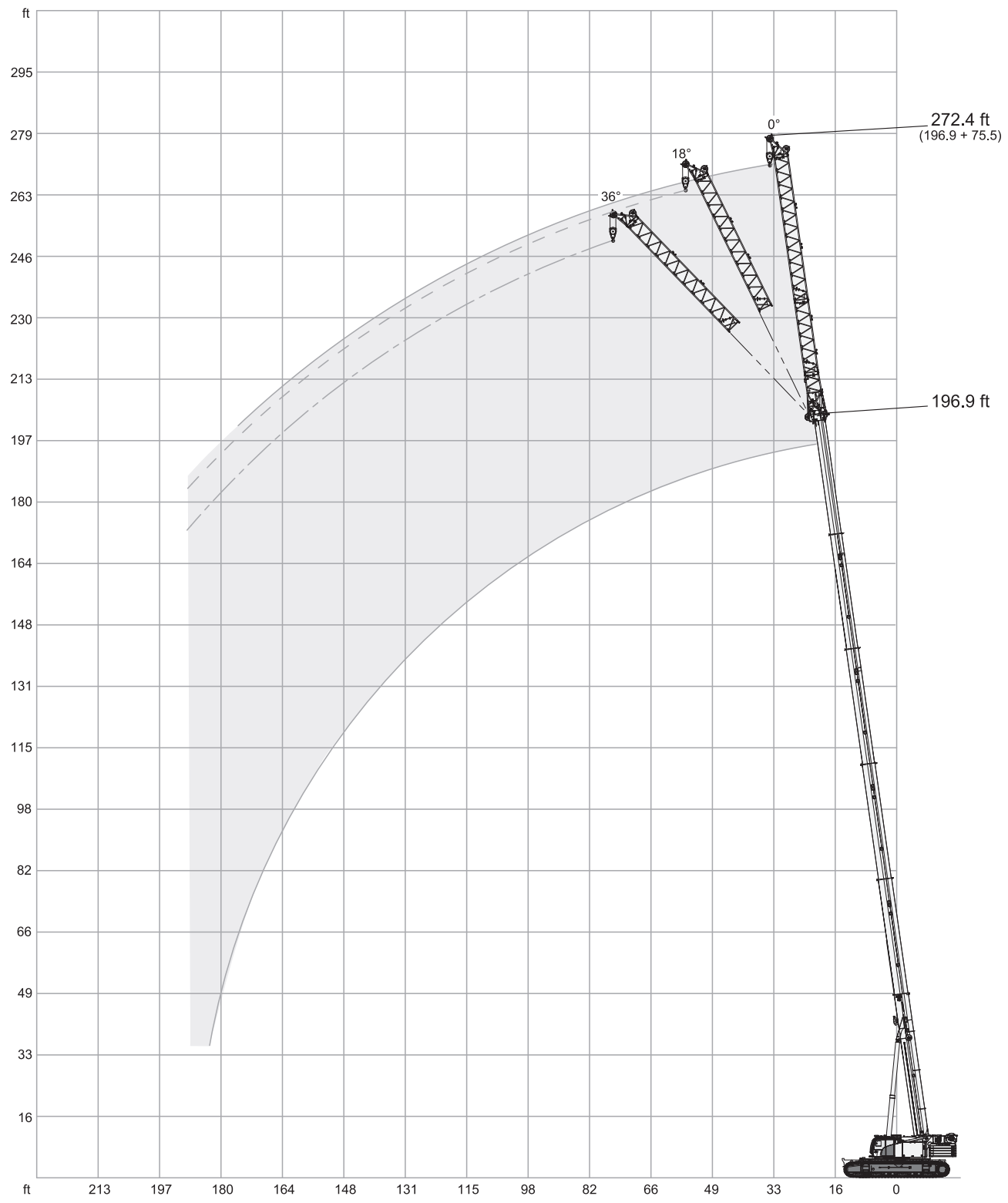
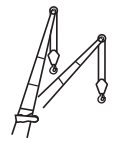
# HAV

|  0 lb +  33,100 lb |                                                                                   |       |  16.4 ft |          |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                      |                                                                                   |       |  42.3 ft |          |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |                                                                                     |
|                                                                                                     |  | 0,3°  | 1°                                                                                        | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |  |
|                                                                                                                                                                                      |                                                                                   | 0°    |                                                                                           | 18°      |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            | 36°  |      |                                                                                     |
|                                                                                                                                                                                      |                                                                                   | ft    |                                                                                           | 1,000 lb |                                                                                           |      |                                                                                              |      |      |      |            |      |      |                                                                                     |
| 10                                                                                                                                                                                   |                                                                                   | 119.2 | 111.0                                                                                     | 89.3     | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 10                                                                                  |
| 12                                                                                                                                                                                   |                                                                                   | 109.6 | 97.0                                                                                      | 86.0     | 82.2                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                                   |                                                                                   | 91.4  | 81.4                                                                                      | 83.0     | 79.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                                   |                                                                                   | 77.3  | 69.6                                                                                      | 80.0     | 73.3                                                                                      | 67.3 | 64.9                                                                                         | -    | -    | -    | -          | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                                   |                                                                                   | 65.6  | 60.8                                                                                      | 69.6     | 64.7                                                                                      | 64.7 | 62.8                                                                                         | -    | -    | -    | -          | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                                   |                                                                                   | 54.7  | 52.8                                                                                      | 58.0     | 56.2                                                                                      | 60.8 | 59.6                                                                                         | -    | -    | -    | -          | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                                   |                                                                                   | 40.2  | 40.2                                                                                      | 42.5     | 42.5                                                                                      | 44.5 | 44.5                                                                                         | -    | -    | -    | -          | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                   |                                                                                   | 30.8  | 30.8                                                                                      | 32.5     | 32.5                                                                                      | 33.9 | 33.9                                                                                         | 27.6 | 24.1 | -    | -          | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                   |                                                                                   | 24.1  | 24.1                                                                                      | 25.5     | 25.5                                                                                      | 26.7 | 26.7                                                                                         | 22.9 | 20.3 | 24.5 | 19.3       | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                   |                                                                                   | 19.7  | 19.7                                                                                      | 20.8     | 20.8                                                                                      | 21.6 | 21.6                                                                                         | 19.4 | 17.4 | 20.8 | 18.8       | 22.2 | 17.6 | 36                                                                                  |
| 40                                                                                                                                                                                   |                                                                                   | 15.9  | 15.9                                                                                      | 16.7     | 16.7                                                                                      | -    | -                                                                                            | 16.1 | 14.7 | 17.5 | 16.0       | 18.7 | 17.0 | 40                                                                                  |
| 48                                                                                                                                                                                   |                                                                                   | -     | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | 11.4 | 10.6 | 12.6 | 11.7       | 13.4 | 12.5 | 48                                                                                  |
| 56                                                                                                                                                                                   |                                                                                   | -     | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | 8.0  | 7.4  | 8.8  | 8.4        | 9.6  | 9.1  | 56                                                                                  |
| 64                                                                                                                                                                                   |                                                                                   | -     | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | 5.2  | 5.1  | 6.1  | 5.8        | 6.7  | 6.4  | 64                                                                                  |
| 72                                                                                                                                                                                   |                                                                                   | -     | -                                                                                         | -        | -                                                                                         | -    | -                                                                                            | 3.1  | 3.1  | 3.8  | 3.8        | 4.2  | 4.2  | 72                                                                                  |

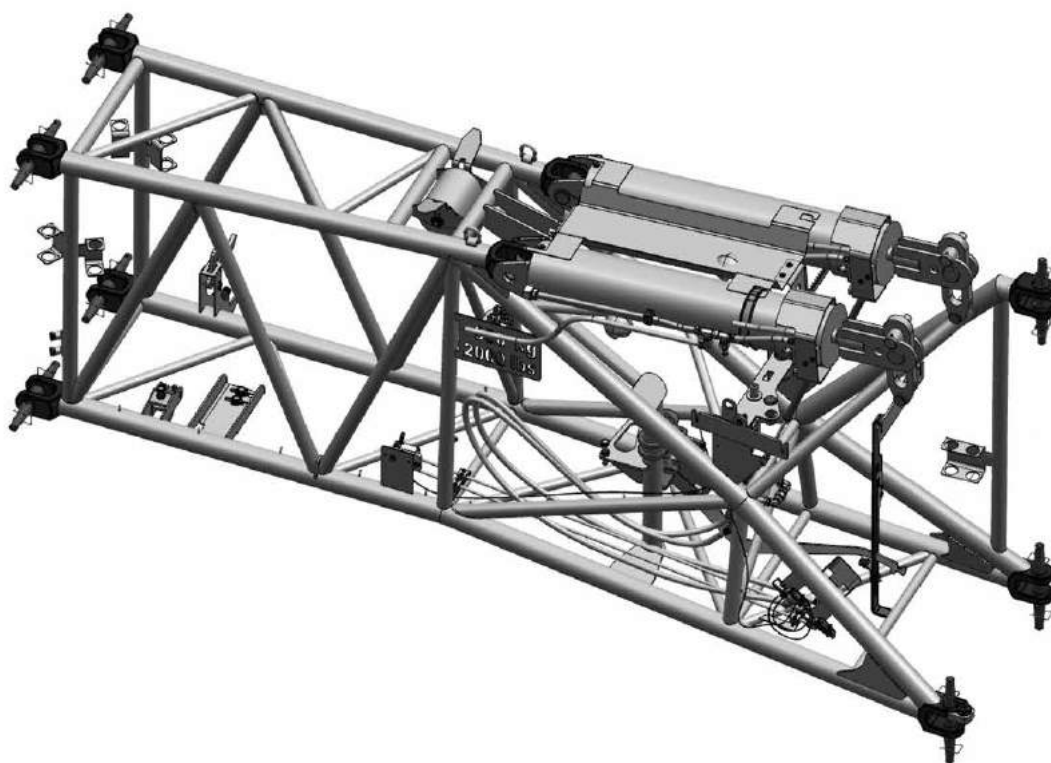
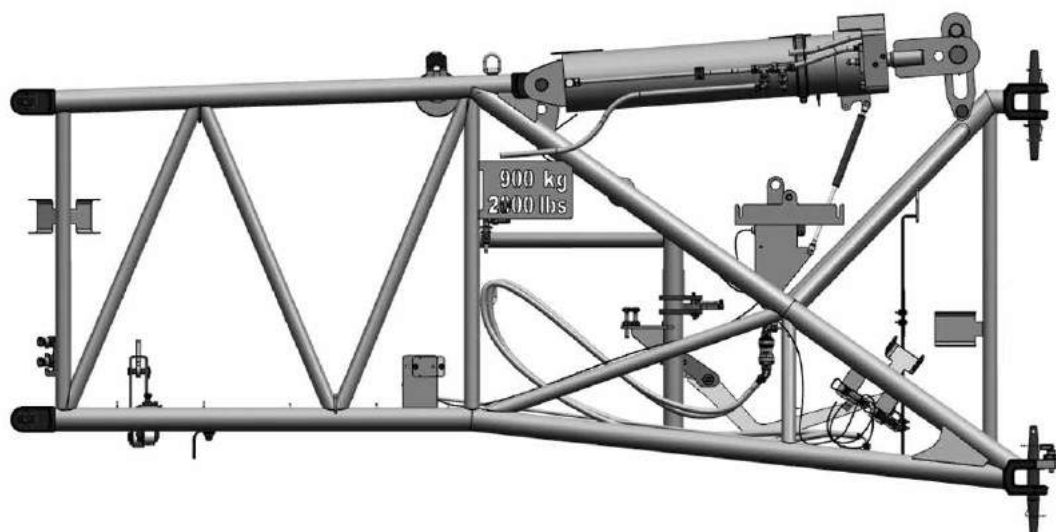
|  0 lb +  33,100 lb |                                                                                     |      |  36.1 ft  |      |  11.5 ft |      |  32.2 ft/s   |      | 360° |      | ASME B30.5 |                                                                                       |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------|------|------|------|------------|---------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                      |                                                                                     |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                       |     |
|                                                                                                   |  | 0,3° | 1°                                                                                         | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                            | 0,3° | 1°   | 0,3° | 1°         |  |     |
|                                                                                                                                                                                      |                                                                                     | 0°   |                                                                                            | 18°  |                                                                                           | 36°  |                                                                                               | 0°   |      | 18°  |            |                                                                                       | 36° |
| ft                                                                                                                                                                                   |                                                                                     |      | 1,000 lb                                                                                   |      |                                                                                           |      |                                                                                               |      |      |      |            |                                                                                       | ft  |
| 10                                                                                                                                                                                   |                                                                                     | 77.9 | 69.2                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 10                                                                                    |     |
| 12                                                                                                                                                                                   |                                                                                     | 73.4 | 66.0                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 12                                                                                    |     |
| 14                                                                                                                                                                                   |                                                                                     | 69.3 | 62.9                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 14                                                                                    |     |
| 16                                                                                                                                                                                   |                                                                                     | 65.6 | 59.9                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 16                                                                                    |     |
| 18                                                                                                                                                                                   |                                                                                     | 61.4 | 55.8                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 18                                                                                    |     |
| 20                                                                                                                                                                                   |                                                                                     | 56.7 | 51.2                                                                                       | 44.9 | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 20                                                                                    |     |
| 24                                                                                                                                                                                   |                                                                                     | 43.7 | 41.6                                                                                       | 41.9 | 39.7                                                                                      | -    | -                                                                                             | -    | -    | -    | -          | 24                                                                                    |     |
| 28                                                                                                                                                                                   |                                                                                     | 33.9 | 33.8                                                                                       | 37.0 | 36.1                                                                                      | -    | -                                                                                             | -    | -    | -    | -          | 28                                                                                    |     |
| 32                                                                                                                                                                                   |                                                                                     | 27.2 | 27.2                                                                                       | 30.0 | 30.0                                                                                      | 29.0 | 27.8                                                                                          | 21.9 | 17.2 | -    | -          | 32                                                                                    |     |
| 36                                                                                                                                                                                   |                                                                                     | 22.6 | 22.6                                                                                       | 25.0 | 25.0                                                                                      | 25.9 | 25.3                                                                                          | 19.3 | 17.0 | -    | -          | 36                                                                                    |     |
| 40                                                                                                                                                                                   |                                                                                     | 18.5 | 18.5                                                                                       | 20.7 | 20.7                                                                                      | 22.4 | 22.4                                                                                          | 16.2 | 14.5 | 18.3 | -          | 40                                                                                    |     |
| 48                                                                                                                                                                                   |                                                                                     | 13.3 | 13.3                                                                                       | 14.8 | 14.8                                                                                      | 16.1 | 16.1                                                                                          | 11.6 | 10.6 | 13.9 | 12.8       | 48                                                                                    |     |
| 56                                                                                                                                                                                   |                                                                                     | 9.7  | 9.7                                                                                        | 10.8 | 10.8                                                                                      | 11.6 | 11.6                                                                                          | 8.1  | 7.6  | 10.2 | 9.5        | 56                                                                                    |     |
| 64                                                                                                                                                                                   |                                                                                     | 7.1  | 7.1                                                                                        | 7.8  | 7.8                                                                                       | -    | -                                                                                             | 5.3  | 5.3  | 7.2  | 6.9        | 64                                                                                    |     |
| 72                                                                                                                                                                                   |                                                                                     | -    | -                                                                                          | -    | -                                                                                         | -    | -                                                                                             | 3.3  | 3.3  | 4.9  | 4.9        | 72                                                                                    |     |
| 80                                                                                                                                                                                   |                                                                                     | -    | -                                                                                          | -    | -                                                                                         | -    | -                                                                                             | -    | -    | 4.2  | 4.2        | 80                                                                                    |     |



# HAV



# HAV-HY



# HAV-HY

|  99,200 lb +  33,100 lb |       |  16.4 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-------------------------------------------------------------------------------------|
|                         |       |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |                                                                                     |
|                                                                                                                                                                                           |       | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |      |                                                                                     |
|                                                                                                                                                                                           |       | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°  |  |
| ft                                                                                                                                                                                        |       |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft   |                                                                                     |
| 10                                                                                                                                                                                        | 119.2 | 105.7                                                                                     | 89.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 10                                                                                  |
| 12                                                                                                                                                                                        | 113.1 | 101.2                                                                                     | 85.9 | 80.0                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                                        | 107.3 | 97.2                                                                                      | 82.9 | 77.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                                        | 102.0 | 93.4                                                                                      | 80.1 | 75.4                                                                                      | 65.7 | 61.8                                                                                         | -    | -    | -    | -          | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                                        | 97.4  | 90.0                                                                                      | 77.8 | 73.4                                                                                      | 64.4 | 60.7                                                                                         | -    | -    | -    | -          | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                                        | 93.1  | 86.8                                                                                      | 75.5 | 71.4                                                                                      | 63.1 | 59.6                                                                                         | -    | -    | -    | -          | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                                        | 85.8  | 81.2                                                                                      | 71.6 | 68.0                                                                                      | 60.2 | 57.9                                                                                         | -    | -    | -    | -          | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        | 79.5  | 76.4                                                                                      | 67.6 | 65.3                                                                                      | 57.2 | 56.3                                                                                         | 74.9 | 68.0 | -    | -          | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        | 74.6  | 72.0                                                                                      | 63.4 | 62.4                                                                                      | 54.9 | 54.1                                                                                         | 67.0 | 65.9 | 62.7 | -          | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        | 69.8  | 67.7                                                                                      | 59.6 | 58.7                                                                                      | 53.1 | 52.5                                                                                         | 60.8 | 60.8 | 58.6 | 56.5       | 51.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        | 64.9  | 63.2                                                                                      | 56.0 | 55.2                                                                                      | -    | -                                                                                            | 55.1 | 55.3 | 54.4 | 53.1       | 49.0 | 48.8 | 40                                                                                  |
| 48                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 46.6 | 46.3 | 45.8 | 44.8       | 44.0 | 43.8 | 48                                                                                  |
| 56                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 39.6 | 39.5 | 39.3 | 38.4       | 38.4 | 38.3 | 56                                                                                  |
| 64                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 34.4 | 34.1 | 34.0 | 33.3       | 33.3 | 33.3 | 64                                                                                  |
| 72                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 31.4 | 30.7 | 29.9 | 29.2       | 29.2 | 29.0 | 72                                                                                  |
| 80                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 28.7 | 28.1 | 26.4 | 26.4       | 25.8 | 25.8 | 80                                                                                  |
| 88                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 26.3 | 26.0 | 24.6 | 24.6       | 24.0 | 24.0 | 88                                                                                  |
| 96                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 23.3 | 23.3 | 23.1 | 23.1       | 22.7 | 22.7 | 96                                                                                  |
| 104                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 20.2 | 20.2 | 20.5 | 20.5       | 20.6 | 20.6 | 104                                                                                 |
| 112                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 17.5 | 17.5 | 17.7 | 17.7       | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 15.2 | 15.2 | 15.4 | 15.4       | -    | -    | 120                                                                                 |
| 128                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.3 | 13.3 | -    | -          | -    | -    | 128                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |          |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|----------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°       | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |          | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      | 1,000 lb |      |      |                                                                                                |      |      |      |      | ft   |                                                                                       |  |
| 48                                                                                  |                                                                                     | 35.0                                                                                         | 28.4 | -    | -        | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 31.0                                                                                         | 27.6 | 30.2 | 27.3     | 29.5 | -    | 24.7                                                                                           | 22.3 | 24.8 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 27.2                                                                                         | 25.1 | 26.7 | 24.8     | 26.4 | 24.4 | 22.1                                                                                           | 21.0 | 22.0 | 21.2 | 21.9 | 21.2 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 23.9                                                                                         | 22.1 | 23.7 | 21.9     | 23.4 | 21.9 | 19.5                                                                                           | 19.0 | 19.2 | 19.2 | 19.2 | 19.2 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 20.7                                                                                         | 19.2 | 21.0 | 19.2     | 20.8 | 19.3 | 17.0                                                                                           | 16.9 | 17.1 | 17.1 | 17.1 | 17.1 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 18.2                                                                                         | 16.9 | 18.4 | 17.0     | 18.5 | 17.1 | 14.8                                                                                           | 14.7 | 15.0 | 14.9 | 15.2 | 15.0 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 16.1                                                                                         | 14.9 | 16.2 | 15.1     | 16.3 | 15.1 | 12.9                                                                                           | 12.8 | 13.1 | 13.1 | 13.2 | 13.1 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 14.1                                                                                         | 13.2 | 14.3 | 13.2     | 14.3 | 13.4 | 11.2                                                                                           | 11.2 | 11.4 | 11.4 | 11.6 | 11.4 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 12.5                                                                                         | 11.6 | 12.7 | 11.8     | 12.7 | 11.8 | 9.8                                                                                            | 9.8  | 10.1 | 9.9  | 10.1 | 10.1 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 11.1                                                                                         | 10.3 | 11.1 | 10.3     | 11.4 | 10.5 | 8.6                                                                                            | 8.6  | 8.8  | 8.7  | 8.8  | 8.8  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 9.8                                                                                          | 9.0  | 9.9  | 9.3      | 10.0 | 9.3  | 7.5                                                                                            | 7.5  | 7.7  | 7.5  | 7.7  | 7.7  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 8.6                                                                                          | 8.0  | 8.8  | 8.2      | 8.8  | 8.2  | 6.4                                                                                            | 6.4  | 6.6  | 6.6  | 6.6  | 6.6  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 7.8                                                                                          | 7.1  | 7.8  | 7.1      | 7.8  | 7.1  | 5.5                                                                                            | 5.5  | 5.8  | 5.6  | 5.8  | 5.8  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 6.7                                                                                          | 6.3  | 6.7  | 6.3      | 6.9  | 6.3  | 4.7                                                                                            | 4.7  | 5.0  | 5.0  | 5.0  | 5.0  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | 5.8                                                                                          | 5.5  | 5.9  | 5.5      | -    | -    | 4.0                                                                                            | 4.0  | 4.2  | 4.2  | 4.2  | 4.2  | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | 4.9                                                                                          | 4.7  | 5.0  | 4.7      | -    | -    | 3.4                                                                                            | 3.4  | 3.4  | 3.4  | -    | -    | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | 4.5                                                                                          | 4.0  | 4.1  | 4.1      | -    | -    | 2.7                                                                                            | 2.7  | 2.7  | 2.7  | -    | -    | 176                                                                                   |  |



# HAV-HY

|  99,200 lb +  33,100 lb |  |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360°                                                                                         |      | ASME B30.5 |      |      |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------|------|------|------|-----|
|                         |  |  42.3 ft |      |                                                                                           |      |                                                                                              |      |  126.0 ft |      |            |      |      |      |     |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3°                                                                                         | 1°   | 0,3°       | 1°   | 0,3° | 1°   |     |
|                                                                                                                                                                                           |  | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°                                                                                           |      | 18°        |      | 36°  |      |     |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |                                                                                              |      |            |      | ft   |      |     |
| 10                                                                                                                                                                                        |  | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -    | -    | 10  |
| 12                                                                                                                                                                                        |  | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -    | -    | 12  |
| 14                                                                                                                                                                                        |  | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -    | -    | 14  |
| 16                                                                                                                                                                                        |  | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -    | -    | 16  |
| 18                                                                                                                                                                                        |  | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -    | -    | 18  |
| 20                                                                                                                                                                                        |  | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -    | -    | 20  |
| 24                                                                                                                                                                                        |  | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -    | -    | 24  |
| 28                                                                                                                                                                                        |  | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -                                                                                            | -    | -          | -    | -    | -    | 28  |
| 32                                                                                                                                                                                        |  | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1                                                                                         | 39.7 | -          | -    | -    | -    | 32  |
| 36                                                                                                                                                                                        |  | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 44.7                                                                                         | 38.6 | -          | -    | -    | -    | 36  |
| 40                                                                                                                                                                                        |  | 39.1                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 43.2                                                                                         | 37.6 | 35.3       | -    | -    | -    | 40  |
| 48                                                                                                                                                                                        |  | 34.5                                                                                      | 32.3 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 40.4                                                                                         | 35.7 | 33.4       | 28.8 | -    | -    | 48  |
| 56                                                                                                                                                                                        |  | 31.0                                                                                      | 29.5 | 26.5                                                                                      | 26.2 | 21.7                                                                                         | 21.7 | 36.6                                                                                         | 33.9 | 31.4       | 27.5 | 24.8 | 23.0 | 56  |
| 64                                                                                                                                                                                        |  | 27.6                                                                                      | 26.9 | 24.2                                                                                      | 24.2 | -                                                                                            | -    | 32.2                                                                                         | 31.8 | 29.3       | 26.5 | 23.6 | 22.4 | 64  |
| 72                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 28.3                                                                                         | 28.3 | 27.2       | 25.4 | 22.5 | 21.6 | 72  |
| 80                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 24.9                                                                                         | 24.7 | 24.7       | 23.0 | 21.4 | 21.0 | 80  |
| 88                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 22.0                                                                                         | 22.0 | 22.1       | 20.6 | 20.3 | 20.1 | 88  |
| 96                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 19.6                                                                                         | 19.6 | 19.8       | 18.4 | 18.5 | 18.5 | 96  |
| 104                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.6                                                                                         | 17.6 | 17.7       | 16.5 | 16.5 | 16.5 | 104 |
| 112                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.0                                                                                         | 16.0 | 16.0       | 14.9 | 14.9 | 14.9 | 112 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.0                                                                                         | 15.0 | 14.5       | 13.4 | 13.6 | 13.6 | 120 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.9                                                                                         | 13.9 | 13.2       | 12.6 | 12.3 | 12.3 | 128 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.5                                                                                         | 12.5 | 12.0       | 12.0 | -    | -    | 136 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.9                                                                                         | 10.9 | 11.1       | 11.1 | -    | -    | 144 |

|                                                                                           |                                                                                     |      |  181.1 ft |          |      |      |  196.9 ft |      |      |      |      |      |      |                                                                                             |  |  |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|----------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|------|---------------------------------------------------------------------------------------------|--|--|
| <br>ft |  | 0,3° | 1°                                                                                           | 0,3°     | 1°   | 0,3° | 1°                                                                                             | 0,3° | 1°   | 0,3° | 1°   | 0,3° | 1°   | <br>ft |  |  |
|                                                                                           |                                                                                     | 0°   |                                                                                              | 18°      |      | 36°  |                                                                                                | 0°   |      | 18°  |      | 36°  |      |                                                                                             |  |  |
|                                                                                           |                                                                                     |      |                                                                                              | 1,000 lb |      |      |                                                                                                |      |      |      |      |      |      |                                                                                             |  |  |
| 56                                                                                        |                                                                                     | 25.0 | 21.4                                                                                         | -        | -    | -    | -                                                                                              | 20.5 | 16.8 | -    | -    | -    | -    | 56                                                                                          |  |  |
| 64                                                                                        |                                                                                     | 23.1 | 21.4                                                                                         | -        | -    | -    | -                                                                                              | 19.6 | 16.8 | -    | -    | -    | -    | 64                                                                                          |  |  |
| 72                                                                                        |                                                                                     | 20.8 | 20.1                                                                                         | 19.7     | 19.7 | -    | -                                                                                              | 18.1 | 16.8 | 17.7 | -    | -    | -    | 72                                                                                          |  |  |
| 80                                                                                        |                                                                                     | 18.4 | 18.4                                                                                         | 18.0     | 17.8 | 17.2 | 17.2                                                                                           | 16.2 | 15.5 | 16.1 | 15.7 | 15.4 | 15.4 | 80                                                                                          |  |  |
| 88                                                                                        |                                                                                     | 16.3 | 16.3                                                                                         | 16.2     | 16.2 | 15.9 | 15.9                                                                                           | 14.4 | 14.2 | 14.4 | 14.3 | 14.2 | 14.1 | 88                                                                                          |  |  |
| 96                                                                                        |                                                                                     | 14.5 | 14.5                                                                                         | 14.7     | 14.6 | 14.7 | 14.5                                                                                           | 12.6 | 12.6 | 12.8 | 12.8 | 13.0 | 12.8 | 96                                                                                          |  |  |
| 104                                                                                       |                                                                                     | 12.8 | 12.8                                                                                         | 13.2     | 13.2 | 13.4 | 13.4                                                                                           | 11.0 | 11.0 | 11.4 | 11.4 | 11.6 | 11.6 | 104                                                                                         |  |  |
| 112                                                                                       |                                                                                     | 11.4 | 11.4                                                                                         | 11.8     | 11.6 | 12.0 | 12.0                                                                                           | 9.6  | 9.6  | 10.1 | 10.1 | 10.3 | 10.3 | 112                                                                                         |  |  |
| 120                                                                                       |                                                                                     | 10.1 | 10.0                                                                                         | 10.5     | 10.3 | 10.7 | 10.7                                                                                           | 8.3  | 8.3  | 8.8  | 8.8  | 9.0  | 9.0  | 120                                                                                         |  |  |
| 128                                                                                       |                                                                                     | 8.9  | 8.8                                                                                          | 9.3      | 9.3  | 9.4  | 9.4                                                                                            | 7.3  | 7.3  | 7.7  | 7.7  | 7.9  | 7.9  | 128                                                                                         |  |  |
| 136                                                                                       |                                                                                     | 7.9  | 7.7                                                                                          | 8.2      | 8.2  | 8.3  | 8.3                                                                                            | 6.4  | 6.4  | 6.6  | 6.6  | 6.9  | 6.9  | 136                                                                                         |  |  |
| 144                                                                                       |                                                                                     | 6.9  | 6.9                                                                                          | 7.1      | 7.1  | 7.3  | 7.3                                                                                            | 5.5  | 5.3  | 5.8  | 5.8  | 6.0  | 6.0  | 144                                                                                         |  |  |
| 152                                                                                       |                                                                                     | 6.1  | 6.1                                                                                          | 6.3      | 6.3  | 6.5  | 6.5                                                                                            | 4.7  | 4.6  | 5.0  | 5.0  | 5.2  | 5.2  | 152                                                                                         |  |  |
| 160                                                                                       |                                                                                     | 5.3  | 5.3                                                                                          | 5.5      | 5.5  | 5.7  | 5.7                                                                                            | 3.9  | 3.9  | 4.2  | 4.2  | 4.4  | 4.4  | 160                                                                                         |  |  |
| 168                                                                                       |                                                                                     | 4.6  | 4.6                                                                                          | 4.7      | 4.7  | 4.9  | 4.9                                                                                            | 3.3  | 3.3  | 3.5  | 3.5  | 3.6  | 3.6  | 168                                                                                         |  |  |
| 176                                                                                       |                                                                                     | 4.0  | 4.0                                                                                          | 4.1      | 4.1  | 4.1  | 4.1                                                                                            | 2.7  | 2.7  | 2.9  | 2.9  | 3.0  | 3.0  | 176                                                                                         |  |  |
| 184                                                                                       |                                                                                     | 3.4  | 3.4                                                                                          | 3.5      | 3.5  | -    | -                                                                                              | -    | -    | -    | -    | -    | -    | 184                                                                                         |  |  |
| 192                                                                                       |                                                                                     | 2.8  | 2.8                                                                                          | -        | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | -    | 192                                                                                         |  |  |
| 200                                                                                       |                                                                                     | 2.4  | 2.4                                                                                          | -        | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | -    | 200                                                                                         |  |  |



# HAV-HY

|  99,200 lb +  33,100 lb |           |  55.8 ft |           |  19.7 ft    |           |  32.2 ft/s |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |           |  42.3 ft |           |  126.0 ft |           |                                                                                             |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |           | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                     | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |           | 18°                                                                                       | 36°       | 0°                                                                                           | 18°       | 36°                                                                                         | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |           |                                                                                           |           | 1,000 lb                                                                                     |           |                                                                                             |         |         |         | ft         |     |
| 14                                                                                                                                                                                        | 44.5 37.4 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 14         | 14  |
| 16                                                                                                                                                                                        | 43.0 36.4 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 16         | 16  |
| 18                                                                                                                                                                                        | 41.6 35.3 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 18         | 18  |
| 20                                                                                                                                                                                        | 40.1 34.2 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 20         | 20  |
| 24                                                                                                                                                                                        | 37.4 32.1 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 24         | 24  |
| 28                                                                                                                                                                                        | 34.9 30.3 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 28         | 28  |
| 32                                                                                                                                                                                        | 32.6 28.5 | 25.5 -                                                                                    | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 32         | 32  |
| 36                                                                                                                                                                                        | 30.6 27.0 | 24.1 21.8                                                                                 | - -       | 30.0 24.8                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | 36         | 36  |
| 40                                                                                                                                                                                        | 28.6 25.6 | 22.8 20.8                                                                                 | - -       | 29.2 24.1                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | 40         | 40  |
| 48                                                                                                                                                                                        | 25.5 23.3 | 20.7 19.0                                                                                 | 16.3 15.8 | 27.6 22.9                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | 48         | 48  |
| 56                                                                                                                                                                                        | 23.0 21.2 | 18.9 17.5                                                                                 | 14.6 14.6 | 26.0 21.8                                                                                    | 20.6 18.4 | - -                                                                                         | - -     | - -     | - -     | 56         | 56  |
| 64                                                                                                                                                                                        | 20.7 19.3 | 17.3 16.3                                                                                 | 13.4 13.4 | 24.5 20.7                                                                                    | 19.4 17.6 | - -                                                                                         | - -     | - -     | - -     | 64         | 64  |
| 72                                                                                                                                                                                        | 18.6 17.9 | 15.7 15.2                                                                                 | 12.6 12.6 | 23.2 19.6                                                                                    | 18.5 16.8 | 15.0 13.9                                                                                   | - -     | - -     | - -     | 72         | 72  |
| 80                                                                                                                                                                                        | 16.7 16.7 | 14.4 14.4                                                                                 | - -       | 21.9 18.8                                                                                    | 17.7 16.0 | 14.4 13.4                                                                                   | - -     | - -     | - -     | 80         | 80  |
| 88                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 20.7 17.9                                                                                    | 16.9 15.5 | 13.7 13.0                                                                                   | - -     | - -     | - -     | 88         | 88  |
| 96                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 19.0 16.9                                                                                    | 16.1 14.9 | 13.3 12.6                                                                                   | - -     | - -     | - -     | 96         | 96  |
| 104                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 17.2 15.8                                                                                    | 15.3 14.4 | 12.9 12.4                                                                                   | - -     | - -     | - -     | 104        | 104 |
| 112                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 15.4 14.5                                                                                    | 14.3 13.9 | 12.6 12.1                                                                                   | - -     | - -     | - -     | 112        | 112 |
| 120                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 14.0 13.1                                                                                    | 13.2 13.2 | 12.2 11.9                                                                                   | - -     | - -     | - -     | 120        | 120 |
| 128                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 12.7 11.8                                                                                    | 12.1 12.1 | 11.7 11.6                                                                                   | - -     | - -     | - -     | 128        | 128 |
| 136                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 11.5 10.8                                                                                    | 10.9 10.9 | 11.0 10.9                                                                                   | - -     | - -     | - -     | 136        | 136 |
| 144                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 10.2 9.7                                                                                     | 9.7 9.7   | 10.0 10.0                                                                                   | - -     | - -     | - -     | 144        | 144 |
| 152                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 9.0 9.0                                                                                      | 9.0 9.0   | - -                                                                                         | - -     | - -     | - -     | 152        | 152 |
| 160                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 8.5 8.5                                                                                      | 8.3 8.3   | - -                                                                                         | - -     | - -     | - -     | 160        | 160 |

|   |           |  181.1 ft |           |  196.9 ft |           |           |         |         |         |     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------|-----------|-----------|---------|---------|---------|-----|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1°   | 0,3° 1°   | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°                                                                                             | 18°       | 36°       | 0°      | 18°     | 36°     |     |     |
| ft                                                                                                                                                                      |           |                                                                                              |           | 1,000 lb                                                                                       |           |           |         |         |         | ft  |     |
| 56                                                                                                                                                                      | 18.6 15.7 | - -                                                                                          | - -       | - -                                                                                            | - -       | - -       | - -     | - -     | - -     | 56  | 56  |
| 64                                                                                                                                                                      | 18.2 15.7 | - -                                                                                          | - -       | - -                                                                                            | 15.7 12.3 | - -       | - -     | - -     | - -     | 64  | 64  |
| 72                                                                                                                                                                      | 17.6 15.7 | - -                                                                                          | - -       | - -                                                                                            | 15.2 12.3 | - -       | - -     | - -     | - -     | 72  | 72  |
| 80                                                                                                                                                                      | 16.8 15.4 | 15.5 14.0                                                                                    | - -       | 14.6 12.3                                                                                      | 14.2 -    | - -       | - -     | - -     | - -     | 80  | 80  |
| 88                                                                                                                                                                      | 15.4 14.9 | 14.4 13.5                                                                                    | 12.6 12.0 | 13.7 12.3                                                                                      | 13.1 12.3 | - -       | - -     | - -     | - -     | 88  | 88  |
| 96                                                                                                                                                                      | 14.1 13.9 | 13.3 12.9                                                                                    | 12.1 11.8 | 12.2 11.9                                                                                      | 12.0 11.7 | 11.2 11.1 | - -     | - -     | - -     | 96  | 96  |
| 104                                                                                                                                                                     | 12.5 12.5 | 12.4 12.2                                                                                    | 11.5 11.3 | 10.7 10.7                                                                                      | 10.9 10.9 | 10.5 10.5 | - -     | - -     | - -     | 104 | 104 |
| 112                                                                                                                                                                     | 11.2 11.2 | 11.4 11.4                                                                                    | 11.0 11.0 | 9.6 9.4                                                                                        | 9.9 9.9   | 9.9 9.9   | - -     | - -     | - -     | 112 | 112 |
| 120                                                                                                                                                                     | 10.0 10.0 | 10.3 10.3                                                                                    | 10.2 10.2 | 8.3 8.3                                                                                        | 8.8 8.8   | 9.1 9.1   | - -     | - -     | - -     | 120 | 120 |
| 128                                                                                                                                                                     | 8.8 8.8   | 9.3 9.3                                                                                      | 9.4 9.4   | 7.3 7.3                                                                                        | 7.8 7.8   | 8.2 8.2   | - -     | - -     | - -     | 128 | 128 |
| 136                                                                                                                                                                     | 7.7 7.7   | 8.3 8.2                                                                                      | 8.6 8.6   | 6.4 6.2                                                                                        | 6.9 6.9   | 7.2 7.2   | - -     | - -     | - -     | 136 | 136 |
| 144                                                                                                                                                                     | 6.9 6.9   | 7.3 7.3                                                                                      | 7.5 7.5   | 5.3 5.3                                                                                        | 6.0 6.0   | 6.4 6.2   | - -     | - -     | - -     | 144 | 144 |
| 152                                                                                                                                                                     | 6.1 6.1   | 6.5 6.5                                                                                      | 6.7 6.7   | 4.7 4.6                                                                                        | 5.2 5.2   | 5.4 5.4   | - -     | - -     | - -     | 152 | 152 |
| 160                                                                                                                                                                     | 5.3 5.3   | 5.7 5.7                                                                                      | 5.9 5.9   | 3.9 3.9                                                                                        | 4.4 4.4   | 4.7 4.6   | - -     | - -     | - -     | 160 | 160 |
| 168                                                                                                                                                                     | 4.6 4.6   | 5.0 5.0                                                                                      | 5.2 5.2   | 3.3 3.3                                                                                        | 3.7 3.7   | 4.1 3.9   | - -     | - -     | - -     | 168 | 168 |
| 176                                                                                                                                                                     | 4.0 4.0   | 4.3 4.3                                                                                      | 4.5 4.5   | 2.7 2.7                                                                                        | 3.2 3.2   | 3.4 3.2   | - -     | - -     | - -     | 176 | 176 |
| 184                                                                                                                                                                     | 3.5 3.5   | 3.7 3.7                                                                                      | 3.8 3.8   | - -                                                                                            | - -       | 2.7 2.6   | - -     | - -     | - -     | 184 | 184 |
| 192                                                                                                                                                                     | - -       | 3.2 3.2                                                                                      | - -       | - -                                                                                            | - -       | - -       | - -     | - -     | - -     | 192 | 192 |
| 200                                                                                                                                                                     | - -       | 2.7 2.7                                                                                      | - -       | - -                                                                                            | - -       | - -       | - -     | - -     | - -     | 200 | 200 |



# HAV-HY

|  99,200 lb +  33,100 lb |      |  75.5 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360°                                                                                         |      | ASME B30.5 |      |         |  |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------|------|---------|--|-------------------------------------------------------------------------------------|--|
|                         |      |  42.3 ft |      |                                                                                           |      |                                                                                             |      |  126.0 ft |      |            |      |         |  |  |  |
| 0,3° 1°                                                                                                                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                     |      | 0,3° 1°                                                                                      |      | 0,3° 1°    |      | 0,3° 1° |  |                                                                                     |  |
| 0°                                                                                                                                                                                        |      | 18°                                                                                       |      | 36°                                                                                       |      | 0°                                                                                          |      | 18°                                                                                          |      | 36°        |      |         |  |                                                                                     |  |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                             |      |                                                                                              |      |            |      | ft      |  |                                                                                     |  |
| 18                                                                                                                                                                                        | 27.7 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 18      |  |                                                                                     |  |
| 20                                                                                                                                                                                        | 27.0 | 23.3                                                                                      | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 20      |  |                                                                                     |  |
| 24                                                                                                                                                                                        | 25.9 | 22.2                                                                                      | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 24      |  |                                                                                     |  |
| 28                                                                                                                                                                                        | 24.5 | 21.1                                                                                      | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 28      |  |                                                                                     |  |
| 32                                                                                                                                                                                        | 23.4 | 20.2                                                                                      | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 32      |  |                                                                                     |  |
| 36                                                                                                                                                                                        | 22.2 | 19.3                                                                                      | -    | -                                                                                         | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 36      |  |                                                                                     |  |
| 40                                                                                                                                                                                        | 21.0 | 18.4                                                                                      | 17.9 | -                                                                                         | -    | -                                                                                           | 19.5 | 17.1                                                                                         | -    | -          | -    | 40      |  |                                                                                     |  |
| 48                                                                                                                                                                                        | 18.9 | 16.8                                                                                      | 16.2 | 14.6                                                                                      | -    | -                                                                                           | 18.5 | 16.3                                                                                         | -    | -          | -    | 48      |  |                                                                                     |  |
| 56                                                                                                                                                                                        | 17.2 | 15.3                                                                                      | 14.8 | 13.4                                                                                      | -    | -                                                                                           | 17.7 | 15.5                                                                                         | -    | -          | -    | 56      |  |                                                                                     |  |
| 64                                                                                                                                                                                        | 15.5 | 14.1                                                                                      | 13.7 | 12.3                                                                                      | 10.4 | 10.3                                                                                        | 16.9 | 14.9                                                                                         | 14.3 | -          | -    | 64      |  |                                                                                     |  |
| 72                                                                                                                                                                                        | 14.4 | 13.0                                                                                      | 12.6 | 11.5                                                                                      | 9.5  | 9.5                                                                                         | 16.1 | 14.1                                                                                         | 13.5 | 12.1       | -    | 72      |  |                                                                                     |  |
| 80                                                                                                                                                                                        | 13.1 | 12.2                                                                                      | 11.3 | 10.9                                                                                      | 8.7  | 8.7                                                                                         | 15.3 | 13.5                                                                                         | 12.9 | 11.6       | 10.1 | 9.4     |  |                                                                                     |  |
| 88                                                                                                                                                                                        | 12.2 | 11.4                                                                                      | 10.4 | 10.2                                                                                      | 8.2  | 8.2                                                                                         | 14.5 | 12.8                                                                                         | 12.2 | 11.1       | 9.7  | 9.2     |  |                                                                                     |  |
| 96                                                                                                                                                                                        | 11.1 | 10.6                                                                                      | 9.5  | 9.5                                                                                       | 7.8  | 7.8                                                                                         | 13.8 | 12.3                                                                                         | 11.6 | 10.7       | 9.2  | 8.9     |  |                                                                                     |  |
| 104                                                                                                                                                                                       | 10.1 | 10.0                                                                                      | 8.9  | 8.9                                                                                       | -    | -                                                                                           | 13.1 | 11.8                                                                                         | 11.1 | 10.2       | 8.9  | 8.6     |  |                                                                                     |  |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 12.5 | 11.4                                                                                         | 10.8 | 9.9        | 8.6  | 8.4     |  |                                                                                     |  |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 11.9 | 10.9                                                                                         | 10.3 | 9.6        | 8.3  | 8.1     |  |                                                                                     |  |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 11.1 | 10.4                                                                                         | 10.0 | 9.1        | 8.0  | 7.9     |  |                                                                                     |  |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 10.2 | 9.7                                                                                          | 9.6  | 8.9        | 7.8  | 7.8     |  |                                                                                     |  |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 9.3  | 9.1                                                                                          | 9.1  | 8.6        | 7.7  | 7.7     |  |                                                                                     |  |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 8.5  | 8.5                                                                                          | 8.5  | 8.3        | 7.5  | 7.5     |  |                                                                                     |  |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 7.7  | 7.7                                                                                          | 7.9  | 7.9        | 7.4  | 7.4     |  |                                                                                     |  |
| 168                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 7.0  | 7.0                                                                                          | 7.2  | 7.2        | -    | -       |  |                                                                                     |  |
| 176                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 6.5  | 6.5                                                                                          | 6.5  | 6.5        | -    | -       |  |                                                                                     |  |
| 184                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                           | 5.8  | 5.8                                                                                          | -    | -          | -    | -       |  |                                                                                     |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |          |     |  196.9 ft |     |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|----------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3°     | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°      |     | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |     | 1,000 lb |     |                                                                                                |     |      |     | ft   |     |                                                                                       |  |
| 64                                                                                  |                                                                                     | 12.8                                                                                         | 11.0 | -    | -   | -        | -   | -                                                                                              | -   | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 12.4                                                                                         | 11.0 | -    | -   | -        | -   | 11.2                                                                                           | 8.8 | -    | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 12.1                                                                                         | 11.0 | -    | -   | -        | -   | 11.0                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 11.8                                                                                         | 10.7 | 10.5 | 9.6 | -        | -   | 10.7                                                                                           | 8.8 | -    | -   | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 11.5                                                                                         | 10.4 | 10.2 | 9.3 | -        | -   | 10.4                                                                                           | 8.8 | 9.6  | 8.7 | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 11.3                                                                                         | 10.2 | 10.0 | 9.1 | 8.6      | -   | 9.8                                                                                            | 8.8 | 9.3  | 8.4 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 10.3                                                                                         | 9.7  | 9.7  | 8.8 | 8.4      | 7.7 | 9.0                                                                                            | 8.8 | 8.8  | 8.3 | 7.9  | 7.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 9.5                                                                                          | 9.4  | 9.3  | 8.5 | 8.1      | 7.4 | 8.0                                                                                            | 7.9 | 8.2  | 7.9 | 7.6  | 7.2 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 8.6                                                                                          | 8.6  | 8.6  | 8.3 | 7.8      | 7.3 | 7.0                                                                                            | 6.9 | 7.4  | 7.4 | 7.2  | 6.9 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 7.5                                                                                          | 7.5  | 7.9  | 7.8 | 7.6      | 7.1 | 6.1                                                                                            | 6.1 | 6.7  | 6.6 | 6.7  | 6.7 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 6.6                                                                                          | 6.6  | 7.3  | 7.1 | 7.1      | 7.1 | 5.3                                                                                            | 5.1 | 6.0  | 6.0 | 6.2  | 6.2 | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 5.8                                                                                          | 5.8  | 6.5  | 6.5 | 6.7      | 6.5 | 4.5                                                                                            | 4.3 | 5.2  | 5.2 | 5.6  | 5.4 | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | 5.0                                                                                          | 5.0  | 5.7  | 5.7 | 5.9      | 5.9 | 3.8                                                                                            | 3.7 | 4.4  | 4.4 | 4.9  | 4.8 | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | 4.4                                                                                          | 4.4  | 5.0  | 5.0 | 5.2      | 5.2 | 3.2                                                                                            | 3.0 | 3.7  | 3.7 | 4.2  | 4.1 | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | 3.8                                                                                          | 3.8  | 4.3  | 4.3 | 4.5      | 4.5 | 2.5                                                                                            | 2.5 | 3.2  | 3.2 | 3.4  | 3.4 | 176                                                                                   |  |
| 184                                                                                 |                                                                                     | 3.3                                                                                          | 3.3  | 3.6  | 3.6 | 3.8      | 3.8 | -                                                                                              | -   | -    | -   | 2.8  | 2.8 | 184                                                                                   |  |
| 192                                                                                 |                                                                                     | -                                                                                            | -    | 3.0  | 3.0 | 3.2      | 3.2 | -                                                                                              | -   | -    | -   | -    | -   | 192                                                                                   |  |
| 200                                                                                 |                                                                                     | -                                                                                            | -    | 2.6  | 2.6 | 2.7      | 2.7 | -                                                                                              | -   | -    | -   | -    | -   | 200                                                                                   |  |



# HAV-HY

|  77,200 lb +  33,100 lb |             |  16.4 ft |           |  19.7 ft    |           |  32.2 ft/s |     | 360°    |     | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----|---------|-----|------------|-----|
|                         |             |  42.3 ft |           |  126.0 ft |           |                                                                                              |     |         |     |            |     |
| 0,3° 1°                                                                                                                                                                                   |             | 0,3° 1°                                                                                   |           | 0,3° 1°                                                                                      |           | 0,3° 1°                                                                                      |     | 0,3° 1° |     | 0,3° 1°    |     |
| 0°                                                                                                                                                                                        |             | 18°                                                                                       |           | 36°                                                                                          |           | 0°                                                                                           |     | 18°     |     | 36°        |     |
| ft                                                                                                                                                                                        |             |                                                                                           |           | 1,000 lb                                                                                     |           |                                                                                              |     |         |     | ft         |     |
| 10                                                                                                                                                                                        | 119.2 105.7 | 89.2 -                                                                                    | - -       | - -                                                                                          | - -       | - -                                                                                          | - - | - -     | - - | - -        | 10  |
| 12                                                                                                                                                                                        | 113.1 101.2 | 85.9 80.0                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                          | - - | - -     | - - | - -        | 12  |
| 14                                                                                                                                                                                        | 107.3 97.2  | 82.9 77.5                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                          | - - | - -     | - - | - -        | 14  |
| 16                                                                                                                                                                                        | 102.0 93.4  | 80.1 75.4                                                                                 | 65.7 61.8 | - -                                                                                          | - -       | - -                                                                                          | - - | - -     | - - | - -        | 16  |
| 18                                                                                                                                                                                        | 97.4 90.0   | 77.8 73.4                                                                                 | 64.4 60.7 | - -                                                                                          | - -       | - -                                                                                          | - - | - -     | - - | - -        | 18  |
| 20                                                                                                                                                                                        | 93.1 86.8   | 75.5 71.4                                                                                 | 63.1 59.6 | - -                                                                                          | - -       | - -                                                                                          | - - | - -     | - - | - -        | 20  |
| 24                                                                                                                                                                                        | 85.8 81.2   | 71.6 68.0                                                                                 | 60.2 57.9 | - -                                                                                          | - -       | - -                                                                                          | - - | - -     | - - | - -        | 24  |
| 28                                                                                                                                                                                        | 79.5 76.4   | 67.6 65.3                                                                                 | 57.2 56.3 | 74.9 68.0                                                                                    | - -       | - -                                                                                          | - - | - -     | - - | - -        | 28  |
| 32                                                                                                                                                                                        | 74.6 72.0   | 63.4 62.4                                                                                 | 54.9 54.1 | 67.0 65.9                                                                                    | 62.7 -    | - -                                                                                          | - - | - -     | - - | - -        | 32  |
| 36                                                                                                                                                                                        | 69.8 67.7   | 59.6 58.7                                                                                 | 53.1 52.5 | 60.8 60.8                                                                                    | 58.6 56.5 | 51.0 -                                                                                       | - - | - -     | - - | - -        | 36  |
| 40                                                                                                                                                                                        | 64.9 63.2   | 56.0 55.2                                                                                 | - -       | 55.1 55.3                                                                                    | 54.4 53.1 | 49.0 48.8                                                                                    | - - | - -     | - - | - -        | 40  |
| 48                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 46.6 46.3                                                                                    | 45.8 44.8 | 44.0 43.8                                                                                    | - - | - -     | - - | - -        | 48  |
| 56                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 39.6 39.5                                                                                    | 39.3 38.4 | 38.4 38.3                                                                                    | - - | - -     | - - | - -        | 56  |
| 64                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 34.4 34.1                                                                                    | 34.0 33.3 | 33.3 33.3                                                                                    | - - | - -     | - - | - -        | 64  |
| 72                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 31.4 30.7                                                                                    | 29.9 29.2 | 29.2 29.0                                                                                    | - - | - -     | - - | - -        | 72  |
| 80                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 26.8 26.8                                                                                    | 26.3 26.3 | 25.6 25.6                                                                                    | - - | - -     | - - | - -        | 80  |
| 88                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 22.5 22.5                                                                                    | 23.1 23.1 | 23.3 23.3                                                                                    | - - | - -     | - - | - -        | 88  |
| 96                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 19.1 19.1                                                                                    | 19.5 19.5 | 19.8 19.8                                                                                    | - - | - -     | - - | - -        | 96  |
| 104                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 16.2 16.2                                                                                    | 16.6 16.6 | 16.7 16.7                                                                                    | - - | - -     | - - | - -        | 104 |
| 112                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 14.3 14.3                                                                                    | 14.3 14.3 | - -                                                                                          | - - | - -     | - - | - -        | 112 |
| 120                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 13.2 13.2                                                                                    | 13.2 13.2 | - -                                                                                          | - - | - -     | - - | - -        | 120 |
| 128                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 11.9 11.9                                                                                    | - -       | - -                                                                                          | - - | - -     | - - | - -        | 128 |

|   |           |  181.1 ft |           |  196.9 ft |           |           |     |         |     |         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------|-----------|-----------|-----|---------|-----|---------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      |           | 0,3° 1°                                                                                        |           | 0,3° 1°   |     | 0,3° 1° |     | 0,3° 1° |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          |           | 36°                                                                                            |           | 0°        |     | 18°     |     | 36°     |     |
| ft                                                                                                                                                                      |           |                                                                                              |           | 1,000 lb                                                                                       |           |           |     |         |     | ft      |     |
| 48                                                                                                                                                                      | 35.0 28.4 | - -                                                                                          | - -       | - -                                                                                            | - -       | - -       | - - | - -     | - - | - -     | 48  |
| 56                                                                                                                                                                      | 31.0 27.6 | 30.2 27.3                                                                                    | 29.5 -    | 24.7 22.3                                                                                      | 24.8 -    | - -       | - - | - -     | - - | - -     | 56  |
| 64                                                                                                                                                                      | 27.2 25.1 | 26.7 24.8                                                                                    | 26.4 24.4 | 22.1 21.0                                                                                      | 22.0 21.2 | 21.9 21.2 | - - | - -     | - - | - -     | 64  |
| 72                                                                                                                                                                      | 23.9 22.1 | 23.7 21.9                                                                                    | 23.4 21.9 | 19.5 19.0                                                                                      | 19.2 19.2 | 19.2 19.2 | - - | - -     | - - | - -     | 72  |
| 80                                                                                                                                                                      | 20.7 19.2 | 21.0 19.2                                                                                    | 20.8 19.3 | 17.0 16.9                                                                                      | 17.1 17.1 | 17.1 17.1 | - - | - -     | - - | - -     | 80  |
| 88                                                                                                                                                                      | 18.2 16.9 | 18.4 17.0                                                                                    | 18.5 17.1 | 14.8 14.7                                                                                      | 15.0 14.9 | 15.2 15.0 | - - | - -     | - - | - -     | 88  |
| 96                                                                                                                                                                      | 16.1 14.9 | 16.2 15.1                                                                                    | 16.3 15.1 | 12.9 12.8                                                                                      | 13.1 13.1 | 13.2 13.1 | - - | - -     | - - | - -     | 96  |
| 104                                                                                                                                                                     | 14.1 13.2 | 14.3 13.2                                                                                    | 14.3 13.4 | 11.2 11.2                                                                                      | 11.4 11.4 | 11.6 11.4 | - - | - -     | - - | - -     | 104 |
| 112                                                                                                                                                                     | 12.2 11.6 | 12.7 11.8                                                                                    | 12.7 11.8 | 9.8 9.8                                                                                        | 10.1 9.9  | 10.1 10.1 | - - | - -     | - - | - -     | 112 |
| 120                                                                                                                                                                     | 10.1 10.1 | 10.6 10.3                                                                                    | 10.8 10.5 | 8.6 8.6                                                                                        | 8.8 8.7   | 8.8 8.8   | - - | - -     | - - | - -     | 120 |
| 128                                                                                                                                                                     | 8.7 8.4   | 8.8 8.8                                                                                      | 9.0 9.0   | 7.5 7.5                                                                                        | 7.7 7.5   | 7.7 7.7   | - - | - -     | - - | - -     | 128 |
| 136                                                                                                                                                                     | 7.6 7.2   | 7.2 7.2                                                                                      | 7.4 7.4   | 6.4 6.4                                                                                        | 6.6 6.6   | 6.6 6.6   | - - | - -     | - - | - -     | 136 |
| 144                                                                                                                                                                     | 6.4 6.4   | 6.4 6.4                                                                                      | 6.4 6.4   | 5.3 5.3                                                                                        | 5.6 5.6   | 5.8 5.8   | - - | - -     | - - | - -     | 144 |
| 152                                                                                                                                                                     | 5.1 5.1   | 5.4 5.4                                                                                      | 5.6 5.6   | 4.1 4.1                                                                                        | 4.5 4.5   | 4.7 4.7   | - - | - -     | - - | - -     | 152 |
| 160                                                                                                                                                                     | 4.2 4.2   | 4.4 4.4                                                                                      | - -       | 3.2 3.2                                                                                        | 3.4 3.4   | 3.5 3.5   | - - | - -     | - - | - -     | 160 |
| 168                                                                                                                                                                     | 3.3 3.3   | 3.5 3.5                                                                                      | - -       | - -                                                                                            | - -       | - -       | - - | - -     | - - | - -     | 168 |
| 176                                                                                                                                                                     | 2.5 2.5   | 2.6 2.6                                                                                      | - -       | - -                                                                                            | - -       | - -       | - - | - -     | - - | - -     | 176 |





# HAV-HY

|  77,200 lb +  33,100 lb |      |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |     |
|                                                                                                                                                                                           |      | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |                                                                                     |     |
|                                                                                                                                                                                           |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°                                                                                 |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        | 72.7 | 59.8                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 10  |
| 12                                                                                                                                                                                        | 69.1 | 57.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 12  |
| 14                                                                                                                                                                                        | 65.8 | 55.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 14  |
| 16                                                                                                                                                                                        | 62.8 | 53.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 16  |
| 18                                                                                                                                                                                        | 60.0 | 51.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 18  |
| 20                                                                                                                                                                                        | 57.4 | 49.3                                                                                      | 44.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 20  |
| 24                                                                                                                                                                                        | 52.7 | 45.9                                                                                      | 41.2 | 37.6                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 24  |
| 28                                                                                                                                                                                        | 48.7 | 42.9                                                                                      | 38.7 | 35.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 28  |
| 32                                                                                                                                                                                        | 45.2 | 40.2                                                                                      | 36.6 | 33.6                                                                                      | 28.2 | 26.3                                                                                         | 46.1 | 39.7 | -    | -          | -    | -                                                                                   | 32  |
| 36                                                                                                                                                                                        | 42.1 | 37.9                                                                                      | 34.7 | 32.1                                                                                      | 27.0 | 25.4                                                                                         | 44.7 | 38.6 | -    | -          | -    | -                                                                                   | 36  |
| 40                                                                                                                                                                                        | 39.1 | 35.7                                                                                      | 32.8 | 30.7                                                                                      | 25.8 | 24.6                                                                                         | 43.2 | 37.6 | 35.3 | -          | -    | -                                                                                   | 40  |
| 48                                                                                                                                                                                        | 34.5 | 32.3                                                                                      | 29.6 | 28.3                                                                                      | 23.3 | 23.0                                                                                         | 40.4 | 35.7 | 33.4 | 28.8       | -    | -                                                                                   | 48  |
| 56                                                                                                                                                                                        | 31.0 | 29.5                                                                                      | 26.5 | 26.2                                                                                      | 21.7 | 21.7                                                                                         | 36.6 | 33.9 | 31.4 | 27.5       | 24.8 | 23.0                                                                                | 56  |
| 64                                                                                                                                                                                        | 27.6 | 26.9                                                                                      | 24.2 | 24.2                                                                                      | -    | -                                                                                            | 32.2 | 31.8 | 29.3 | 26.5       | 23.6 | 22.4                                                                                | 64  |
| 72                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 28.3 | 28.3 | 27.2 | 25.4       | 22.5 | 21.6                                                                                | 72  |
| 80                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 24.9 | 24.7 | 24.7 | 23.0       | 21.4 | 21.0                                                                                | 80  |
| 88                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 21.8 | 21.8 | 22.1 | 20.6       | 20.3 | 20.1                                                                                | 88  |
| 96                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 18.8 | 18.8 | 19.6 | 18.4       | 18.5 | 18.5                                                                                | 96  |
| 104                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 17.1 | 17.1 | 17.0 | 16.5       | 16.5 | 16.5                                                                                | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.9 | 14.9 | 14.4 | 14.4       | 14.7 | 14.7                                                                                | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.8 | 12.8 | 13.1 | 13.1       | 12.9 | 12.9                                                                                | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.0 | 11.0 | 11.6 | 11.6       | 10.7 | 10.7                                                                                | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.7  | 9.7  | 9.8  | 9.8        | -    | -                                                                                   | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.1  | 9.1  | 8.6  | 8.4        | -    | -                                                                                   | 144 |

|   |      |  181.1 ft |      |      |      |      |          |  196.9 ft |      |      |      |      |      |  |      |  |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|------|--|----|--|
|                                                                                                                                                                         |      | 0,3°                                                                                         |      | 1°   |      | 0,3° |          | 1°                                                                                             |      | 0,3° |      | 1°   |      |                                                                                       | 0,3° |  | 1° |  |
|                                                                                                                                                                         |      | 0°                                                                                           |      | 18°  |      | 36°  |          | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |      |  |    |  |
| ft                                                                                                                                                                      |      |                                                                                              |      |      |      |      | 1,000 lb |                                                                                                |      |      |      |      |      |                                                                                       | ft   |  |    |  |
| 56                                                                                                                                                                      | 25.0 | 21.4                                                                                         | -    | -    | -    | -    | 20.5     | 16.8                                                                                           | -    | -    | -    | -    | -    | -                                                                                     | 56   |  |    |  |
| 64                                                                                                                                                                      | 23.1 | 21.4                                                                                         | -    | -    | -    | -    | 19.6     | 16.8                                                                                           | -    | -    | -    | -    | -    | -                                                                                     | 64   |  |    |  |
| 72                                                                                                                                                                      | 20.8 | 20.1                                                                                         | 19.7 | 19.7 | -    | -    | 18.1     | 16.8                                                                                           | 17.7 | -    | -    | -    | -    | -                                                                                     | 72   |  |    |  |
| 80                                                                                                                                                                      | 18.4 | 18.4                                                                                         | 18.0 | 17.8 | 17.2 | 17.2 | 16.2     | 15.5                                                                                           | 16.1 | 15.7 | 15.4 | 15.4 | 14.2 | 14.1                                                                                  | 80   |  |    |  |
| 88                                                                                                                                                                      | 16.3 | 16.3                                                                                         | 16.2 | 16.2 | 15.9 | 15.9 | 14.4     | 14.2                                                                                           | 14.4 | 14.3 | 14.2 | 14.1 | 13.0 | 12.8                                                                                  | 88   |  |    |  |
| 96                                                                                                                                                                      | 14.5 | 14.5                                                                                         | 14.7 | 14.6 | 14.7 | 14.5 | 12.6     | 12.6                                                                                           | 12.8 | 12.8 | 13.0 | 12.8 | 11.6 | 11.6                                                                                  | 96   |  |    |  |
| 104                                                                                                                                                                     | 12.8 | 12.8                                                                                         | 13.2 | 13.2 | 13.4 | 13.4 | 11.0     | 11.0                                                                                           | 11.4 | 11.4 | 11.6 | 11.6 | 10.3 | 10.3                                                                                  | 104  |  |    |  |
| 112                                                                                                                                                                     | 11.4 | 11.4                                                                                         | 11.8 | 11.6 | 12.0 | 12.0 | 9.6      | 9.6                                                                                            | 10.1 | 10.1 | 10.3 | 10.3 | 9.0  | 9.0                                                                                   | 112  |  |    |  |
| 120                                                                                                                                                                     | 10.1 | 10.0                                                                                         | 10.5 | 10.3 | 10.7 | 10.7 | 8.3      | 8.3                                                                                            | 8.8  | 8.8  | 9.0  | 9.0  | 7.9  | 7.9                                                                                   | 120  |  |    |  |
| 128                                                                                                                                                                     | 8.9  | 8.8                                                                                          | 9.3  | 9.3  | 9.4  | 9.4  | 7.3      | 7.3                                                                                            | 7.7  | 7.7  | 7.9  | 7.9  | 6.9  | 6.9                                                                                   | 128  |  |    |  |
| 136                                                                                                                                                                     | 7.6  | 7.6                                                                                          | 8.2  | 8.2  | 8.3  | 8.3  | 6.4      | 6.4                                                                                            | 6.6  | 6.6  | 6.9  | 6.9  | 6.0  | 6.0                                                                                   | 136  |  |    |  |
| 144                                                                                                                                                                     | 6.2  | 6.2                                                                                          | 6.9  | 6.9  | 7.3  | 7.3  | 5.5      | 5.3                                                                                            | 5.8  | 5.8  | 6.0  | 6.0  | 5.2  | 5.2                                                                                   | 144  |  |    |  |
| 152                                                                                                                                                                     | 5.4  | 5.2                                                                                          | 5.6  | 5.6  | 6.0  | 6.0  | 4.7      | 4.5                                                                                            | 5.0  | 5.0  | 5.2  | 5.2  | 4.4  | 4.4                                                                                   | 152  |  |    |  |
| 160                                                                                                                                                                     | 4.6  | 4.6                                                                                          | 4.8  | 4.8  | 4.9  | 4.9  | 3.6      | 3.6                                                                                            | 4.2  | 4.2  | 4.4  | 4.4  | 3.5  | 3.5                                                                                   | 160  |  |    |  |
| 168                                                                                                                                                                     | 3.8  | 3.8                                                                                          | 4.0  | 4.0  | 4.2  | 4.2  | -        | -                                                                                              | 3.3  | 3.3  | 3.5  | 3.5  | 2.6  | 2.6                                                                                   | 168  |  |    |  |
| 176                                                                                                                                                                     | 3.0  | 3.0                                                                                          | 3.2  | 3.2  | 3.4  | 3.4  | -        | -                                                                                              | 2.3  | 2.3  | 2.6  | 2.6  | -    | -                                                                                     | 176  |  |    |  |





# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 44.5                                                                                      | 37.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 43.0                                                                                      | 36.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 41.6                                                                                      | 35.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 40.1                                                                                      | 34.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 37.4                                                                                      | 32.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 34.9                                                                                      | 30.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 32.6                                                                                      | 28.5 | 25.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 30.6                                                                                      | 27.0 | 24.1                                                                                      | 21.8 | -                                                                                            | -    | 30.0 | 24.8 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 28.6                                                                                      | 25.6 | 22.8                                                                                      | 20.8 | -                                                                                            | -    | 29.2 | 24.1 | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 25.5                                                                                      | 23.3 | 20.7                                                                                      | 19.0 | 16.3                                                                                         | 15.8 | 27.6 | 22.9 | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 23.0                                                                                      | 21.2 | 18.9                                                                                      | 17.5 | 14.6                                                                                         | 14.6 | 26.0 | 21.8 | 20.6       | 18.4 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 20.7                                                                                      | 19.3 | 17.3                                                                                      | 16.3 | 13.4                                                                                         | 13.4 | 24.5 | 20.7 | 19.4       | 17.6 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | 18.6                                                                                      | 17.9 | 15.7                                                                                      | 15.2 | 12.6                                                                                         | 12.6 | 23.2 | 19.6 | 18.5       | 16.8 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | 16.7                                                                                      | 16.7 | 14.4                                                                                      | 14.4 | -                                                                                            | -    | 21.9 | 18.8 | 17.7       | 16.0 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 20.7 | 17.9 | 16.9       | 15.5 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 19.0 | 16.9 | 16.1       | 14.9 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.8 | 15.8 | 15.3       | 14.4 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 14.4 | 14.4 | 14.3       | 13.9 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.6 | 12.6 | 13.1       | 13.1 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.8 | 10.8 | 11.6       | 11.7 | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.0 | 10.0 | 10.3       | 10.3 | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.9  | 8.9  | 8.8        | 8.8  | 144                                                                                 |     |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.8  | 7.8  | 8.4        | 8.4  | 152                                                                                 |     |
| 160                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.7  | 6.7  | 7.2        | 7.2  | 160                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |          |  196.9 ft |      |      |      |      |      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°       | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |          | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      |      | 1,000 lb |                                                                                                |      |      |      |      | ft   |                                                                                       |
| 56                                                                                  |                                                                                     | 18.6                                                                                         | 15.7 | -    | -    | -    | -        | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |
| 64                                                                                  |                                                                                     | 18.2                                                                                         | 15.7 | -    | -    | -    | -        | 15.7                                                                                           | 12.3 | -    | -    | -    | -    | 64                                                                                    |
| 72                                                                                  |                                                                                     | 17.6                                                                                         | 15.7 | -    | -    | -    | -        | 15.2                                                                                           | 12.3 | -    | -    | -    | -    | 72                                                                                    |
| 80                                                                                  |                                                                                     | 16.8                                                                                         | 15.4 | 15.5 | 14.0 | -    | -        | 14.6                                                                                           | 12.3 | 14.2 | -    | -    | -    | 80                                                                                    |
| 88                                                                                  |                                                                                     | 15.4                                                                                         | 14.9 | 14.4 | 13.5 | 12.6 | 12.0     | 13.7                                                                                           | 12.3 | 13.1 | 12.3 | -    | -    | 88                                                                                    |
| 96                                                                                  |                                                                                     | 14.1                                                                                         | 13.9 | 13.3 | 12.9 | 12.1 | 11.8     | 12.2                                                                                           | 11.9 | 12.0 | 11.7 | 11.2 | 11.1 | 96                                                                                    |
| 104                                                                                 |                                                                                     | 12.5                                                                                         | 12.5 | 12.4 | 12.2 | 11.5 | 11.3     | 10.7                                                                                           | 10.7 | 10.9 | 10.9 | 10.5 | 10.5 | 104                                                                                   |
| 112                                                                                 |                                                                                     | 11.2                                                                                         | 11.2 | 11.4 | 11.4 | 11.0 | 11.0     | 9.6                                                                                            | 9.4  | 9.9  | 9.9  | 9.9  | 9.9  | 112                                                                                   |
| 120                                                                                 |                                                                                     | 10.0                                                                                         | 10.0 | 10.3 | 10.3 | 10.2 | 10.2     | 8.3                                                                                            | 8.3  | 8.8  | 8.8  | 9.1  | 9.1  | 120                                                                                   |
| 128                                                                                 |                                                                                     | 8.8                                                                                          | 8.8  | 9.3  | 9.3  | 9.4  | 9.4      | 7.3                                                                                            | 7.3  | 7.8  | 7.8  | 8.2  | 8.2  | 128                                                                                   |
| 136                                                                                 |                                                                                     | 7.7                                                                                          | 7.7  | 8.3  | 8.2  | 8.6  | 8.6      | 6.4                                                                                            | 6.2  | 6.9  | 6.9  | 7.2  | 7.2  | 136                                                                                   |
| 144                                                                                 |                                                                                     | 6.9                                                                                          | 6.9  | 7.3  | 7.3  | 7.5  | 7.5      | 5.3                                                                                            | 5.3  | 6.0  | 6.0  | 6.4  | 6.2  | 144                                                                                   |
| 152                                                                                 |                                                                                     | 5.8                                                                                          | 5.8  | 6.5  | 6.5  | 6.7  | 6.7      | 4.7                                                                                            | 4.6  | 5.2  | 5.2  | 5.4  | 5.4  | 152                                                                                   |
| 160                                                                                 |                                                                                     | 4.7                                                                                          | 4.7  | 5.6  | 5.6  | 5.9  | 5.9      | 3.9                                                                                            | 3.9  | 4.4  | 4.4  | 4.7  | 4.6  | 160                                                                                   |
| 168                                                                                 |                                                                                     | 3.9                                                                                          | 3.9  | 4.6  | 4.6  | 5.0  | 5.0      | 3.2                                                                                            | 3.2  | 3.7  | 3.7  | 4.1  | 3.9  | 168                                                                                   |
| 176                                                                                 |                                                                                     | 3.4                                                                                          | 3.4  | 3.7  | 3.7  | 4.1  | 4.1      | 2.5                                                                                            | 2.5  | 3.2  | 3.2  | 3.4  | 3.2  | 176                                                                                   |
| 184                                                                                 |                                                                                     | -                                                                                            | -    | 3.1  | 3.1  | 3.2  | 3.2      | -                                                                                              | -    | -    | -    | 2.7  | 2.6  | 184                                                                                   |



# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |  75.5 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |          |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|----------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |          |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°       |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |          |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |          | ft                                                                                  |     |
| 18                                                                                                                                                                                        | 27.7                                                                              | -                                                                                         |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -        | 18                                                                                  |     |
| 20                                                                                                                                                                                        | 27.0                                                                              | 23.3                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -        | 20                                                                                  |     |
| 24                                                                                                                                                                                        | 25.9                                                                              | 22.2                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -        | 24                                                                                  |     |
| 28                                                                                                                                                                                        | 24.5                                                                              | 21.1                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -        | 28                                                                                  |     |
| 32                                                                                                                                                                                        | 23.4                                                                              | 20.2                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -        | 32                                                                                  |     |
| 36                                                                                                                                                                                        | 22.2                                                                              | 19.3                                                                                      |      | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -        | 36                                                                                  |     |
| 40                                                                                                                                                                                        | 21.0                                                                              | 18.4                                                                                      | 17.9 | -                                                                                         | -    | -                                                                                            | 19.5 | 17.1 | -    | -          | -        | 40                                                                                  |     |
| 48                                                                                                                                                                                        | 18.9                                                                              | 16.8                                                                                      | 16.2 | 14.6                                                                                      | -    | -                                                                                            | 18.5 | 16.3 | -    | -          | -        | 48                                                                                  |     |
| 56                                                                                                                                                                                        | 17.2                                                                              | 15.3                                                                                      | 14.8 | 13.4                                                                                      | -    | -                                                                                            | 17.7 | 15.5 | -    | -          | -        | 56                                                                                  |     |
| 64                                                                                                                                                                                        | 15.5                                                                              | 14.1                                                                                      | 13.7 | 12.3                                                                                      | 10.4 | 10.3                                                                                         | 16.9 | 14.9 | 14.3 | -          | -        | 64                                                                                  |     |
| 72                                                                                                                                                                                        | 14.4                                                                              | 13.0                                                                                      | 12.6 | 11.5                                                                                      | 9.5  | 9.5                                                                                          | 16.1 | 14.1 | 13.5 | 12.1       | -        | 72                                                                                  |     |
| 80                                                                                                                                                                                        | 13.1                                                                              | 12.2                                                                                      | 11.3 | 10.9                                                                                      | 8.7  | 8.7                                                                                          | 15.3 | 13.5 | 12.9 | 11.6       | 10.1 9.4 | 80                                                                                  |     |
| 88                                                                                                                                                                                        | 12.2                                                                              | 11.4                                                                                      | 10.4 | 10.2                                                                                      | 8.2  | 8.2                                                                                          | 14.5 | 12.8 | 12.2 | 11.1       | 9.7 9.2  | 88                                                                                  |     |
| 96                                                                                                                                                                                        | 11.1                                                                              | 10.6                                                                                      | 9.5  | 9.5                                                                                       | 7.8  | 7.8                                                                                          | 13.8 | 12.3 | 11.6 | 10.7       | 9.2 8.9  | 96                                                                                  |     |
| 104                                                                                                                                                                                       | 10.1                                                                              | 10.0                                                                                      | 8.9  | 8.9                                                                                       | -    | -                                                                                            | 13.1 | 11.8 | 11.1 | 10.2       | 8.9 8.6  | 104                                                                                 |     |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.5 | 11.4 | 10.8 | 9.9        | 8.6 8.4  | 112                                                                                 |     |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.9 | 10.9 | 10.3 | 9.6        | 8.3 8.1  | 120                                                                                 |     |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.9 | 10.4 | 10.0 | 9.1        | 8.0 7.9  | 128                                                                                 |     |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.8  | 9.6  | 9.6  | 8.9        | 7.8 7.8  | 136                                                                                 |     |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.2  | 8.2  | 9.1  | 8.6        | 7.7 7.7  | 144                                                                                 |     |
| 152                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.2  | 7.2  | 8.2  | 8.0        | 7.5 7.5  | 152                                                                                 |     |
| 160                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.8  | 6.8  | 6.9  | 6.9        | 7.2 7.2  | 160                                                                                 |     |
| 168                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.0  | 6.0  | 6.0  | 6.0        | -        | 168                                                                                 |     |
| 176                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.2  | 5.2  | 5.6  | 5.6        | -        | 176                                                                                 |     |
| 184                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.5  | 4.5  | -    | -          | -        | 184                                                                                 |     |

|   |      |  181.1 ft |      |      |     |      |      |  196.9 ft |     |      |     |      |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|-----|------|------|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|
|                                                                                                                                                                         |      | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3° | 1°   | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |                                                                                       |
| 0°                                                                                                                                                                      |      | 18°                                                                                          |      | 36°  |     | 0°   |      | 18°                                                                                            |     | 36°  |     |      |     |                                                                                       |
| ft                                                                                                                                                                      |      | 1,000 lb                                                                                     |      |      |     |      |      |                                                                                                |     |      |     | ft   |     |                                                                                       |
| 64                                                                                                                                                                      | 12.8 | 11.0                                                                                         | -    | -    | -   | -    | -    | -                                                                                              | -   | -    | -   | 64   |     |                                                                                       |
| 72                                                                                                                                                                      | 12.4 | 11.0                                                                                         | -    | -    | -   | -    | 11.2 | 8.8                                                                                            | -   | -    | -   | 72   |     |                                                                                       |
| 80                                                                                                                                                                      | 12.1 | 11.0                                                                                         | -    | -    | -   | -    | 11.0 | 8.8                                                                                            | -   | -    | -   | 80   |     |                                                                                       |
| 88                                                                                                                                                                      | 11.8 | 10.7                                                                                         | 10.5 | 9.6  | -   | -    | 10.7 | 8.8                                                                                            | -   | -    | -   | 88   |     |                                                                                       |
| 96                                                                                                                                                                      | 11.5 | 10.4                                                                                         | 10.2 | 9.3  | -   | -    | 10.4 | 8.8                                                                                            | 9.6 | 8.7  | -   | 96   |     |                                                                                       |
| 104                                                                                                                                                                     | 11.3 | 10.2                                                                                         | 10.0 | 9.1  | 8.6 | -    | 9.8  | 8.8                                                                                            | 9.3 | 8.4  | -   | 104  |     |                                                                                       |
| 112                                                                                                                                                                     | 10.3 | 9.7                                                                                          | 9.7  | 8.8  | 8.4 | 7.7  | 9.0  | 8.8                                                                                            | 8.8 | 8.3  | 7.9 | 7.3  | 112 |                                                                                       |
| 120                                                                                                                                                                     | 9.5  | 9.4                                                                                          | 9.3  | 8.5  | 8.1 | 7.4  | 8.0  | 7.9                                                                                            | 8.2 | 7.9  | 7.6 | 7.2  | 120 |                                                                                       |
| 128                                                                                                                                                                     | 8.6  | 8.6                                                                                          | 8.6  | 8.3  | 7.8 | 7.3  | 7.0  | 6.9                                                                                            | 7.4 | 7.4  | 7.2 | 6.9  | 128 |                                                                                       |
| 136                                                                                                                                                                     | 7.5  | 7.5                                                                                          | 7.9  | 7.8  | 7.6 | 7.1  | 6.1  | 6.1                                                                                            | 6.7 | 6.6  | 6.7 | 6.7  | 136 |                                                                                       |
| 144                                                                                                                                                                     | 6.6  | 6.6                                                                                          | 7.3  | 7.1  | 7.1 | 7.1  | 5.3  | 5.1                                                                                            | 6.0 | 6.0  | 6.2 | 6.2  | 144 |                                                                                       |
| 152                                                                                                                                                                     | 5.8  | 5.8                                                                                          | 6.5  | 6.5  | 6.7 | 6.5  | 4.5  | 4.3                                                                                            | 5.2 | 5.2  | 5.6 | 5.4  | 152 |                                                                                       |
| 160                                                                                                                                                                     | 5.0  | 5.0                                                                                          | 5.7  | 5.7  | 5.9 | 5.9  | 3.8  | 3.7                                                                                            | 4.4 | 4.4  | 4.9 | 4.8  | 160 |                                                                                       |
| 168                                                                                                                                                                     | 3.9  | 3.9                                                                                          | 4.9  | 4.9  | 5.2 | 5.2  | 3.2  | 3.0                                                                                            | 3.7 | 3.7  | 4.2 | 4.1  | 168 |                                                                                       |
| 176                                                                                                                                                                     | 3.0  | 3.0                                                                                          | 4.1  | 4.1  | 4.5 | 4.5  | 2.5  | 2.5                                                                                            | 3.2 | 3.2  | 3.4 | 3.4  | 176 |                                                                                       |
| 184                                                                                                                                                                     | -    | -                                                                                            | 3.3  | 3.3  | 3.8 | 3.8  | -    | -                                                                                              | -   | -    | 2.8 | 2.8  | 184 |                                                                                       |

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|  55,100 lb +  33,100 lb |       |  16.4 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|
|                         |       |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |
|                                                                                                                                                                                           |       | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |      |
|                                                                                                                                                                                           |       | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°  |
| ft                                                                                                                                                                                        |       |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft   |
| 10                                                                                                                                                                                        | 119.2 | 105.7                                                                                     | 89.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10   |
| 12                                                                                                                                                                                        | 113.1 | 101.2                                                                                     | 85.9 | 80.0                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 12   |
| 14                                                                                                                                                                                        | 107.3 | 97.2                                                                                      | 82.9 | 77.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 14   |
| 16                                                                                                                                                                                        | 102.0 | 93.4                                                                                      | 80.1 | 75.4                                                                                      | 65.7 | 61.8                                                                                         | -    | -    | -    | -          | -    | 16   |
| 18                                                                                                                                                                                        | 97.4  | 90.0                                                                                      | 77.8 | 73.4                                                                                      | 64.4 | 60.7                                                                                         | -    | -    | -    | -          | -    | 18   |
| 20                                                                                                                                                                                        | 93.1  | 86.8                                                                                      | 75.5 | 71.4                                                                                      | 63.1 | 59.6                                                                                         | -    | -    | -    | -          | -    | 20   |
| 24                                                                                                                                                                                        | 85.8  | 81.2                                                                                      | 71.6 | 68.0                                                                                      | 60.2 | 57.9                                                                                         | -    | -    | -    | -          | -    | 24   |
| 28                                                                                                                                                                                        | 79.5  | 76.4                                                                                      | 67.6 | 65.3                                                                                      | 57.2 | 56.3                                                                                         | 74.9 | 68.0 | -    | -          | -    | 28   |
| 32                                                                                                                                                                                        | 74.6  | 72.0                                                                                      | 63.4 | 62.4                                                                                      | 54.9 | 54.1                                                                                         | 67.0 | 65.9 | 62.7 | -          | -    | 32   |
| 36                                                                                                                                                                                        | 69.8  | 67.7                                                                                      | 59.6 | 58.7                                                                                      | 53.1 | 52.5                                                                                         | 60.8 | 60.8 | 58.6 | 56.5       | 51.0 | 36   |
| 40                                                                                                                                                                                        | 64.9  | 63.2                                                                                      | 56.0 | 55.2                                                                                      | -    | -                                                                                            | 55.1 | 55.3 | 54.4 | 53.1       | 49.0 | 48.8 |
| 48                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 46.6 | 45.9 | 45.8 | 44.8       | 44.0 | 43.8 |
| 56                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 38.2 | 37.6 | 38.7 | 38.3       | 38.4 | 38.3 |
| 64                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 32.1 | 31.9 | 31.5 | 31.3       | 31.8 | 31.8 |
| 72                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 25.9 | 25.9 | 26.8 | 26.8       | 27.2 | 27.2 |
| 80                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 21.4 | 21.4 | 22.1 | 22.1       | 22.5 | 22.5 |
| 88                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 18.6 | 18.6 | 18.2 | 18.2       | 18.7 | 18.7 |
| 96                                                                                                                                                                                        | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 16.5 | 16.5 | 16.4 | 16.4       | 16.6 | 16.6 |
| 104                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.0 | 14.0 | 14.2 | 14.2       | 14.4 | 14.4 |
| 112                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.8 | 11.8 | 12.0 | 12.0       | -    | -    |
| 120                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.0 | 10.0 | 10.2 | 10.2       | -    | -    |
| 128                                                                                                                                                                                       | -     | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.0  | 9.0  | -    | -          | -    | -    |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 48                                                                                  |                                                                                     | 35.0                                                                                         | 28.4 | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 31.0                                                                                         | 27.6 | 30.2 | 27.3 | 29.5     | -    | 24.7                                                                                           | 22.3 | 24.8 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 27.2                                                                                         | 25.1 | 26.7 | 24.8 | 26.4     | 24.4 | 22.1                                                                                           | 21.0 | 22.0 | 21.2 | 21.9 | 21.2 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 23.9                                                                                         | 22.1 | 23.7 | 21.9 | 23.4     | 21.9 | 19.5                                                                                           | 19.0 | 19.2 | 19.2 | 19.2 | 19.2 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 19.7                                                                                         | 19.2 | 20.5 | 19.2 | 20.7     | 19.3 | 17.0                                                                                           | 16.9 | 17.1 | 17.1 | 17.1 | 17.1 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 16.1                                                                                         | 16.1 | 16.8 | 16.6 | 17.3     | 17.0 | 14.8                                                                                           | 14.7 | 15.0 | 14.9 | 15.2 | 15.0 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 13.7                                                                                         | 13.0 | 13.7 | 13.7 | 14.1     | 14.1 | 12.6                                                                                           | 12.6 | 13.1 | 13.1 | 13.2 | 13.1 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 11.3                                                                                         | 11.2 | 11.6 | 11.4 | 11.6     | 11.6 | 10.4                                                                                           | 10.4 | 10.9 | 10.9 | 11.3 | 11.3 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 9.4                                                                                          | 9.4  | 9.8  | 9.8  | 10.0     | 10.0 | 8.3                                                                                            | 8.3  | 8.7  | 8.7  | 9.2  | 9.2  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 7.6                                                                                          | 7.6  | 8.0  | 8.0  | 8.2      | 8.2  | 6.5                                                                                            | 6.5  | 6.9  | 6.9  | 7.3  | 7.3  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 6.1                                                                                          | 6.1  | 6.4  | 6.4  | 6.6      | 6.6  | 5.0                                                                                            | 5.0  | 5.4  | 5.4  | 5.6  | 5.6  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 4.7                                                                                          | 4.7  | 4.9  | 4.9  | 5.2      | 5.2  | 3.6                                                                                            | 3.6  | 4.0  | 4.0  | 4.3  | 4.3  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 3.6                                                                                          | 3.6  | 3.8  | 3.8  | 4.0      | 4.0  | 2.5                                                                                            | 2.5  | 2.7  | 2.7  | 2.9  | 2.9  | 144                                                                                   |  |

# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1 | 39.7 | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 44.7 | 38.6 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 43.2 | 37.6 | 35.3       | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 34.5                                                                                      | 32.3 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 40.4 | 35.7 | 33.4       | 28.8 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 31.0                                                                                      | 29.5 | 26.5                                                                                      | 26.2 | 21.7                                                                                         | 21.7 | 36.6 | 33.9 | 31.4       | 27.5 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 27.6                                                                                      | 26.9 | 24.2                                                                                      | 24.2 | -                                                                                            | -    | 31.3 | 30.6 | 29.3       | 26.5 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 25.9 | 25.9 | 27.2       | 25.4 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 21.6 | 21.6 | 22.9       | 22.5 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 18.8 | 18.8 | 18.9       | 18.9 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.7 | 15.7 | 15.8       | 15.8 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.6 | 13.6 | 14.1       | 14.1 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.3 | 12.3 | 12.3       | 11.8 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.9 | 10.9 | 10.6       | 10.4 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.3  | 9.3  | 9.5        | 9.5  | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.0  | 8.0  | 8.2        | 8.2  | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.9  | 6.9  | 7.1        | 7.1  | 144                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |          |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°       | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |          | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      |      | 1,000 lb |                                                                                                |      |      |      |      | ft   |                                                                                       |  |
| 56                                                                                  |                                                                                     | 25.0                                                                                         | 21.4 | -    | -    | -    | -        | 20.5                                                                                           | 16.8 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 23.1                                                                                         | 21.4 | -    | -    | -    | -        | 19.6                                                                                           | 16.8 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 20.8                                                                                         | 20.1 | 19.7 | 19.7 | -    | -        | 18.1                                                                                           | 16.8 | 17.7 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 18.4                                                                                         | 18.4 | 18.0 | 17.8 | 17.2 | 17.2     | 16.2                                                                                           | 15.5 | 16.1 | 15.7 | 15.4 | 15.4 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 16.3                                                                                         | 16.3 | 16.2 | 16.2 | 15.9 | 15.9     | 14.4                                                                                           | 14.2 | 14.4 | 14.3 | 14.2 | 14.1 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 13.8                                                                                         | 13.8 | 14.7 | 14.6 | 14.7 | 14.5     | 12.6                                                                                           | 12.6 | 12.8 | 12.8 | 13.0 | 12.8 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 11.3                                                                                         | 11.3 | 12.6 | 12.6 | 13.4 | 13.4     | 10.8                                                                                           | 10.8 | 11.4 | 11.4 | 11.6 | 11.6 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 9.6                                                                                          | 9.6  | 10.3 | 10.3 | 11.3 | 11.3     | 8.9                                                                                            | 8.9  | 10.0 | 10.0 | 10.3 | 10.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 8.2                                                                                          | 8.2  | 8.8  | 8.8  | 9.3  | 9.3      | 7.1                                                                                            | 7.1  | 8.2  | 8.2  | 8.9  | 8.9  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 6.7                                                                                          | 6.7  | 7.5  | 7.5  | 7.9  | 7.9      | 5.6                                                                                            | 5.6  | 6.6  | 6.6  | 7.3  | 7.3  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 5.4                                                                                          | 5.4  | 6.0  | 6.0  | 6.7  | 6.7      | 4.3                                                                                            | 4.3  | 5.2  | 5.2  | 5.8  | 5.8  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 4.0                                                                                          | 4.0  | 4.7  | 4.7  | 5.4  | 5.4      | 3.1                                                                                            | 3.1  | 3.8  | 3.8  | 4.5  | 4.5  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 3.2                                                                                          | 3.2  | 3.6  | 3.6  | 4.0  | 4.0      | -                                                                                              | -    | -    | -    | 3.2  | 3.2  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | -                                                                                            | -    | 2.7  | 2.7  | 3.0  | 3.0      | -                                                                                              | -    | -    | -    | -    | -    | 160                                                                                   |  |



# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 44.5                                                                                      | 37.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 43.0                                                                                      | 36.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 41.6                                                                                      | 35.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 40.1                                                                                      | 34.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 37.4                                                                                      | 32.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 34.9                                                                                      | 30.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 32.6                                                                                      | 28.5 | 25.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 30.6                                                                                      | 27.0 | 24.1                                                                                      | 21.8 | -                                                                                            | -    | 30.0 | 24.8 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 28.6                                                                                      | 25.6 | 22.8                                                                                      | 20.8 | -                                                                                            | -    | 29.2 | 24.1 | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 25.5                                                                                      | 23.3 | 20.7                                                                                      | 19.0 | 16.3                                                                                         | 15.8 | 27.6 | 22.9 | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 23.0                                                                                      | 21.2 | 18.9                                                                                      | 17.5 | 14.6                                                                                         | 14.6 | 26.0 | 21.8 | 20.6       | 18.4 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 20.7                                                                                      | 19.3 | 17.3                                                                                      | 16.3 | 13.4                                                                                         | 13.4 | 24.5 | 20.7 | 19.4       | 17.6 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | 18.6                                                                                      | 17.9 | 15.7                                                                                      | 15.2 | 12.6                                                                                         | 12.6 | 23.2 | 19.6 | 18.5       | 16.8 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | 16.7                                                                                      | 16.7 | 14.4                                                                                      | 14.4 | -                                                                                            | -    | 21.6 | 18.8 | 17.7       | 16.0 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 18.4 | 17.8 | 16.9       | 15.5 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.7 | 15.7 | 16.1       | 14.9 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.4 | 13.4 | 14.5       | 14.4 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.0 | 12.0 | 12.4       | 12.4 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.2 | 10.2 | 10.5       | 10.5 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.9  | 8.9  | 9.6        | 9.6  | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.1  | 8.1  | 8.2        | 8.2  | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.3  | 7.3  | 7.3        | 7.3  | 144                                                                                 |     |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.5  | 6.5  | 6.7        | 6.7  | 152                                                                                 |     |
| 160                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.5  | 5.5  | 5.8        | 5.8  | 160                                                                                 |     |

|   |  |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |  |      |    |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|------|----|-----|--|
|                                                                                                                                                                         |  | 0,3°                                                                                         |      | 1°   |      | 0,3°     |      | 1°                                                                                             |      | 0,3° |      | 1°   |      |                                                                                       | 0,3° |    | 1°  |  |
|                                                                                                                                                                         |  | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |      |    |     |  |
| ft                                                                                                                                                                      |  |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      |      |      |                                                                                       |      | ft |     |  |
| 56                                                                                                                                                                      |  | 18.6                                                                                         | 15.7 | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | -                                                                                     | -    | -  | 56  |  |
| 64                                                                                                                                                                      |  | 18.2                                                                                         | 15.7 | -    | -    | -        | -    | 15.7                                                                                           | 12.3 | -    | -    | -    | -    | -                                                                                     | -    | -  | 64  |  |
| 72                                                                                                                                                                      |  | 17.6                                                                                         | 15.7 | -    | -    | -        | -    | 15.2                                                                                           | 12.3 | -    | -    | -    | -    | -                                                                                     | -    | -  | 72  |  |
| 80                                                                                                                                                                      |  | 16.8                                                                                         | 15.4 | 15.5 | 14.0 | -        | -    | 14.6                                                                                           | 12.3 | 14.2 | -    | -    | -    | -                                                                                     | -    | -  | 80  |  |
| 88                                                                                                                                                                      |  | 15.4                                                                                         | 14.9 | 14.4 | 13.5 | 12.6     | 12.0 | 13.7                                                                                           | 12.3 | 13.1 | 12.3 | -    | -    | -                                                                                     | -    | -  | 88  |  |
| 96                                                                                                                                                                      |  | 13.8                                                                                         | 13.7 | 13.3 | 12.9 | 12.1     | 11.8 | 12.2                                                                                           | 11.9 | 12.0 | 11.7 | 11.2 | 11.1 | -                                                                                     | -    | -  | 96  |  |
| 104                                                                                                                                                                     |  | 11.7                                                                                         | 11.7 | 12.4 | 12.2 | 11.5     | 11.3 | 10.7                                                                                           | 10.7 | 10.9 | 10.9 | 10.5 | 10.5 | -                                                                                     | -    | -  | 104 |  |
| 112                                                                                                                                                                     |  | 9.8                                                                                          | 9.8  | 11.4 | 11.4 | 11.0     | 11.0 | 8.9                                                                                            | 8.9  | 9.9  | 9.9  | 9.9  | 9.9  | -                                                                                     | -    | -  | 112 |  |
| 120                                                                                                                                                                     |  | 8.2                                                                                          | 8.2  | 9.8  | 9.8  | 10.2     | 10.2 | 7.4                                                                                            | 7.4  | 8.8  | 8.8  | 9.1  | 9.1  | -                                                                                     | -    | -  | 120 |  |
| 128                                                                                                                                                                     |  | 7.3                                                                                          | 7.3  | 8.1  | 8.1  | 9.1      | 9.1  | 6.1                                                                                            | 6.1  | 7.6  | 7.6  | 8.2  | 8.2  | -                                                                                     | -    | -  | 128 |  |
| 136                                                                                                                                                                     |  | 6.0                                                                                          | 6.0  | 6.8  | 6.8  | 7.6      | 7.6  | 4.7                                                                                            | 4.7  | 6.3  | 6.3  | 7.2  | 7.2  | -                                                                                     | -    | -  | 136 |  |
| 144                                                                                                                                                                     |  | 4.9                                                                                          | 4.9  | 6.0  | 6.0  | 6.2      | 6.2  | 3.6                                                                                            | 3.6  | 4.9  | 4.9  | 6.0  | 6.0  | -                                                                                     | -    | -  | 144 |  |
| 152                                                                                                                                                                     |  | 3.8                                                                                          | 3.8  | 4.7  | 4.7  | 5.4      | 5.4  | -                                                                                              | -    | 3.8  | 3.8  | 4.7  | 4.7  | -                                                                                     | -    | -  | 152 |  |
| 160                                                                                                                                                                     |  | 2.8                                                                                          | 2.8  | 3.7  | 3.7  | 4.3      | 4.3  | -                                                                                              | -    | 2.8  | 2.8  | 3.6  | 3.6  | -                                                                                     | -    | -  | 160 |  |
| 168                                                                                                                                                                     |  | -                                                                                            | -    | -    | -    | 3.3      | 3.3  | -                                                                                              | -    | -    | -    | -    | -    | -                                                                                     | -    | -  | 168 |  |
| 176                                                                                                                                                                     |  | -                                                                                            | -    | -    | -    | 2.3      | 2.3  | -                                                                                              | -    | -    | -    | -    | -    | -                                                                                     | -    | -  | 176 |  |

# HAV-HY

|  55,100 lb +  33,100 lb |      |  75.5 ft |         |  19.7 ft |         |  32.2 ft/s  |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |      |  42.3 ft |         |                                                                                           |         |  126.0 ft |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |      | 0,3° 1°                                                                                   | 0,3° 1° | 0,3° 1°                                                                                   | 0,3° 1° | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |      | 18°                                                                                       | 36°     | 0°                                                                                        | 18°     | 36°                                                                                          | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |         |                                                                                           |         |                                                                                              |         |         |         | ft         |     |
| 18                                                                                                                                                                                        | 27.7 | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 18         |     |
| 20                                                                                                                                                                                        | 27.0 | 23.3                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 20         |     |
| 24                                                                                                                                                                                        | 25.9 | 22.2                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 24         |     |
| 28                                                                                                                                                                                        | 24.5 | 21.1                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 28         |     |
| 32                                                                                                                                                                                        | 23.4 | 20.2                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 32         |     |
| 36                                                                                                                                                                                        | 22.2 | 19.3                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | 36         |     |
| 40                                                                                                                                                                                        | 21.0 | 18.4                                                                                      | 17.9    | -                                                                                         | -       | -                                                                                            | 19.5    | 17.1    | -       | 40         |     |
| 48                                                                                                                                                                                        | 18.9 | 16.8                                                                                      | 16.2    | 14.6                                                                                      | -       | -                                                                                            | 18.5    | 16.3    | -       | 48         |     |
| 56                                                                                                                                                                                        | 17.2 | 15.3                                                                                      | 14.8    | 13.4                                                                                      | -       | -                                                                                            | 17.7    | 15.5    | -       | 56         |     |
| 64                                                                                                                                                                                        | 15.5 | 14.1                                                                                      | 13.7    | 12.3                                                                                      | 10.4    | 10.3                                                                                         | 16.9    | 14.9    | 14.3    | -          | 64  |
| 72                                                                                                                                                                                        | 14.4 | 13.0                                                                                      | 12.6    | 11.5                                                                                      | 9.5     | 9.5                                                                                          | 16.1    | 14.1    | 13.5    | 12.1       | 72  |
| 80                                                                                                                                                                                        | 13.1 | 12.2                                                                                      | 11.3    | 10.9                                                                                      | 8.7     | 8.7                                                                                          | 15.3    | 13.5    | 12.9    | 11.6       | 80  |
| 88                                                                                                                                                                                        | 12.2 | 11.4                                                                                      | 10.4    | 10.2                                                                                      | 8.2     | 8.2                                                                                          | 14.5    | 12.8    | 12.2    | 11.1       | 88  |
| 96                                                                                                                                                                                        | 11.1 | 10.6                                                                                      | 9.5     | 9.5                                                                                       | 7.8     | 7.8                                                                                          | 13.8    | 12.3    | 11.6    | 10.7       | 96  |
| 104                                                                                                                                                                                       | 10.1 | 10.0                                                                                      | 8.9     | 8.9                                                                                       | -       | -                                                                                            | 13.1    | 11.8    | 11.1    | 10.2       | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 11.4    | 11.4    | 10.8    | 9.9        | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 9.7     | 9.7     | 10.3    | 9.6        | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 8.8     | 8.8     | 9.6     | 9.1        | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 7.6     | 7.6     | 8.1     | 8.1        | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 6.6     | 6.6     | 7.3     | 7.3        | 144 |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 6.0     | 6.0     | 6.4     | 6.4        | 152 |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 5.4     | 5.4     | 5.6     | 5.6        | 160 |
| 168                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 4.9     | 4.9     | 4.9     | 4.9        | 168 |
| 176                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 4.1     | 4.1     | 4.5     | 4.5        | 176 |
| 184                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 3.5     | 3.5     | -       | -          | 184 |

|   |      |  181.1 ft |         |         |         |  196.9 ft |         |         |         |     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|-----|-----|
| 0,3° 1°                                                                                                                                                                 |      | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |     |
| 0°                                                                                                                                                                      |      | 18°                                                                                          | 36°     | 0°      | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |     |     |
| ft                                                                                                                                                                      |      | 1,000 lb                                                                                     |         |         |         |                                                                                                |         |         |         | ft  |     |
| 64                                                                                                                                                                      | 12.8 | 11.0                                                                                         | -       | -       | -       | -                                                                                              | -       | -       | -       | 64  |     |
| 72                                                                                                                                                                      | 12.4 | 11.0                                                                                         | -       | -       | -       | -                                                                                              | 11.2    | 8.8     | -       | 72  |     |
| 80                                                                                                                                                                      | 12.1 | 11.0                                                                                         | -       | -       | -       | -                                                                                              | 11.0    | 8.8     | -       | 80  |     |
| 88                                                                                                                                                                      | 11.8 | 10.7                                                                                         | 10.5    | 9.6     | -       | -                                                                                              | 10.7    | 8.8     | -       | 88  |     |
| 96                                                                                                                                                                      | 11.5 | 10.4                                                                                         | 10.2    | 9.3     | -       | -                                                                                              | 10.4    | 8.8     | 9.6     | 8.7 | 96  |
| 104                                                                                                                                                                     | 11.1 | 10.2                                                                                         | 10.0    | 9.1     | 8.6     | -                                                                                              | 9.8     | 8.8     | 9.3     | 8.4 | 104 |
| 112                                                                                                                                                                     | 9.2  | 9.2                                                                                          | 9.7     | 8.8     | 8.4     | 7.7                                                                                            | 8.5     | 8.5     | 8.8     | 8.3 | 112 |
| 120                                                                                                                                                                     | 7.7  | 7.7                                                                                          | 9.3     | 8.5     | 8.1     | 7.4                                                                                            | 6.9     | 6.9     | 8.2     | 7.9 | 120 |
| 128                                                                                                                                                                     | 6.7  | 6.7                                                                                          | 8.3     | 8.0     | 7.8     | 7.3                                                                                            | 5.5     | 5.5     | 7.4     | 7.4 | 128 |
| 136                                                                                                                                                                     | 5.8  | 5.8                                                                                          | 6.9     | 6.9     | 7.6     | 7.1                                                                                            | 4.3     | 4.3     | 6.3     | 6.3 | 136 |
| 144                                                                                                                                                                     | 4.7  | 4.7                                                                                          | 5.8     | 5.8     | 7.1     | 7.1                                                                                            | 3.3     | 3.3     | 5.1     | 5.1 | 144 |
| 152                                                                                                                                                                     | 3.6  | 3.6                                                                                          | 5.0     | 5.0     | 6.0     | 6.0                                                                                            | -       | -       | 4.0     | 4.0 | 152 |
| 160                                                                                                                                                                     | 2.8  | 2.8                                                                                          | 4.3     | 4.3     | 4.7     | 4.7                                                                                            | -       | -       | 3.1     | 3.1 | 160 |
| 168                                                                                                                                                                     | -    | -                                                                                            | 3.3     | 3.3     | 4.0     | 4.0                                                                                            | -       | -       | -       | -   | 168 |
| 176                                                                                                                                                                     | -    | -                                                                                            | 2.3     | 2.3     | 3.2     | 3.2                                                                                            | -       | -       | -       | -   | 176 |

# HAV-HY

|  33,100 lb +  33,100 lb |                                                                                   |       |  16.4 ft |      |  19.7 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |       |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |      |      |                                                                                     |
|                                                                                                          |  | 0,3°  | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°    |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            | 36°  |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |       |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            |      |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 119.2 | 105.7                                                                                     | 89.2 | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 113.1 | 101.2                                                                                     | 85.9 | 80.0                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 107.3 | 97.2                                                                                      | 82.9 | 77.5                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 102.0 | 93.4                                                                                      | 80.1 | 75.4                                                                                      | 65.7     | 61.8                                                                                         | -    | -    | -    | -          | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 97.4  | 90.0                                                                                      | 77.8 | 73.4                                                                                      | 64.4     | 60.7                                                                                         | -    | -    | -    | -          | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 93.1  | 86.8                                                                                      | 75.5 | 71.4                                                                                      | 63.1     | 59.6                                                                                         | -    | -    | -    | -          | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 85.8  | 81.2                                                                                      | 71.6 | 68.0                                                                                      | 60.2     | 57.9                                                                                         | -    | -    | -    | -          | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 79.5  | 76.4                                                                                      | 67.6 | 65.3                                                                                      | 57.2     | 56.3                                                                                         | 74.9 | 67.2 | -    | -          | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 74.6  | 72.0                                                                                      | 63.4 | 62.4                                                                                      | 54.9     | 54.1                                                                                         | 66.7 | 60.5 | 62.7 | -          | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 67.2  | 66.0                                                                                      | 59.6 | 58.7                                                                                      | 53.1     | 52.5                                                                                         | 58.5 | 53.5 | 58.0 | 54.2       | 51.0 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 59.1  | 59.1                                                                                      | 55.6 | 54.8                                                                                      | -        | -                                                                                            | 51.3 | 47.4 | 52.8 | 48.3       | 49.0 | 48.4 | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 41.6 | 38.8 | 41.4 | 38.4       | 42.3 | 39.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 32.5 | 31.6 | 32.7 | 32.5       | 33.1 | 32.1 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 25.7 | 25.7 | 26.3 | 26.2       | 26.8 | 26.8 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 21.9 | 21.9 | 22.3 | 22.1       | 22.1 | 22.1 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 17.8 | 17.8 | 18.4 | 18.4       | 18.9 | 18.9 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 15.1 | 15.1 | 15.2 | 15.2       | 15.5 | 15.5 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 12.6 | 12.6 | 12.9 | 12.9       | 13.3 | 13.3 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 10.4 | 10.4 | 10.8 | 10.8       | 10.9 | 10.9 | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 8.7  | 8.7  | 8.9  | 8.9        | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.2  | 7.2  | 7.4  | 7.4        | -    | -    | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.9  | 5.9  | -    | -          | -    | -    | 128                                                                                 |

|                                                                                     |                                                                                     |      |  181.1 ft |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  |      | 0,3°                                                                                         | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     | 0°                                                                                  |      | 18°                                                                                          |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |      |                                                                                              |      | 1,000 lb |      |                                                                                                |      |      |      |      |      | ft                                                                                    |  |
| 48                                                                                  | 34.2                                                                                | 28.4 | -                                                                                            | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  | 27.7                                                                                | 25.9 | 28.9                                                                                         | 26.5 | 29.1     | 24.0 | 24.7                                                                                           | 22.3 | 24.8 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  | 23.0                                                                                | 21.3 | 23.3                                                                                         | 22.1 | 24.2     | 23.0 | 21.2                                                                                           | 20.1 | 22.0 | 20.9 | 21.9 | 21.2 | 64                                                                                    |  |
| 72                                                                                  | 19.0                                                                                | 18.4 | 18.8                                                                                         | 18.6 | 19.7     | 19.0 | 17.1                                                                                           | 16.6 | 18.0 | 17.5 | 18.8 | 18.1 | 72                                                                                    |  |
| 80                                                                                  | 15.3                                                                                | 15.1 | 16.2                                                                                         | 16.0 | 16.3     | 16.3 | 13.6                                                                                           | 13.5 | 14.5 | 14.3 | 15.2 | 15.0 | 80                                                                                    |  |
| 88                                                                                  | 12.1                                                                                | 12.1 | 12.9                                                                                         | 12.9 | 13.3     | 13.3 | 10.8                                                                                           | 10.8 | 11.7 | 11.7 | 12.3 | 12.3 | 88                                                                                    |  |
| 96                                                                                  | 9.6                                                                                 | 9.6  | 10.2                                                                                         | 10.2 | 10.7     | 10.7 | 8.4                                                                                            | 8.4  | 9.1  | 9.1  | 9.6  | 9.6  | 96                                                                                    |  |
| 104                                                                                 | 7.3                                                                                 | 7.3  | 8.0                                                                                          | 8.0  | 8.4      | 8.4  | 6.4                                                                                            | 6.4  | 6.9  | 6.9  | 7.3  | 7.3  | 104                                                                                   |  |
| 112                                                                                 | 5.6                                                                                 | 5.6  | 6.1                                                                                          | 6.1  | 6.5      | 6.5  | 4.5                                                                                            | 4.5  | 5.0  | 5.0  | 5.4  | 5.4  | 112                                                                                   |  |
| 120                                                                                 | 4.1                                                                                 | 4.1  | 4.5                                                                                          | 4.5  | 4.8      | 4.8  | 3.0                                                                                            | 3.0  | 3.6  | 3.6  | 3.9  | 3.9  | 120                                                                                   |  |
| 128                                                                                 | 2.9                                                                                 | 2.9  | 3.2                                                                                          | 3.2  | 3.4      | 3.4  | -                                                                                              | -    | -    | -    | -    | -    | 128                                                                                   |  |



# HAV-HY

|  33,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1 | 39.7 | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 44.7 | 38.6 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 43.2 | 37.6 | 35.3       | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 34.5                                                                                      | 32.3 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 39.1 | 34.8 | 33.4       | 28.8 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 31.0                                                                                      | 29.5 | 26.5                                                                                      | 26.2 | 21.7                                                                                         | 21.7 | 31.8 | 30.0 | 31.4       | 27.5 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 27.6                                                                                      | 26.9 | 24.2                                                                                      | 24.2 | -                                                                                            | -    | 26.1 | 25.7 | 27.3       | 25.7 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 21.3 | 21.3 | 22.3       | 21.9 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 18.0 | 18.0 | 18.6       | 18.3 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.5 | 15.5 | 16.0       | 15.3 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.9 | 12.9 | 13.3       | 13.3 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.2 | 11.2 | 11.5       | 11.5 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.4  | 9.4  | 9.6        | 9.6  | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.8  | 7.8  | 8.4        | 8.4  | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.6  | 6.6  | 6.9        | 6.9  | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.5  | 5.5  | 5.8        | 5.8  | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.5  | 4.5  | 4.7        | 4.7  | 144                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      |      |      | ft                                                                                    |  |
| 56                                                                                  |                                                                                     | 25.0                                                                                         | 21.4 | -    | -    | -    | -    | 20.5                                                                                           | 16.8 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 22.1                                                                                         | 20.4 | -    | -    | -    | -    | 19.6                                                                                           | 16.8 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 18.2                                                                                         | 17.3 | 19.7 | 19.0 | -    | -    | 17.0                                                                                           | 16.3 | 17.7 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 15.4                                                                                         | 15.2 | 16.4 | 15.9 | 17.1 | 17.0 | 13.6                                                                                           | 13.5 | 15.6 | 15.2 | 15.4 | 15.4 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 12.4                                                                                         | 12.4 | 13.7 | 13.6 | 14.9 | 14.5 | 10.8                                                                                           | 10.8 | 12.5 | 12.5 | 13.7 | 13.7 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 10.0                                                                                         | 10.0 | 11.5 | 11.5 | 12.4 | 12.4 | 8.4                                                                                            | 8.4  | 10.0 | 10.0 | 11.3 | 11.3 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 7.9                                                                                          | 7.9  | 9.3  | 9.3  | 10.4 | 10.4 | 6.4                                                                                            | 6.4  | 7.8  | 7.8  | 9.1  | 9.1  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 6.3                                                                                          | 6.3  | 7.4  | 7.4  | 8.3  | 8.3  | 4.8                                                                                            | 4.8  | 6.1  | 6.1  | 7.2  | 7.2  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 4.8                                                                                          | 4.8  | 5.8  | 5.8  | 6.5  | 6.5  | 3.4                                                                                            | 3.4  | 4.5  | 4.5  | 5.6  | 5.6  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 3.5                                                                                          | 3.5  | 4.3  | 4.3  | 5.0  | 5.0  | -                                                                                              | -    | 3.3  | 3.3  | 4.1  | 4.1  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | -                                                                                            | -    | 3.1  | 3.1  | 3.6  | 3.6  | -                                                                                              | -    | -    | -    | 2.7  | 2.7  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 2.5  | 2.5  | -                                                                                              | -    | -    | -    | -    | -    | 144                                                                                   |  |



# HAV-HY

|  33,100 lb +  33,100 lb |           |  55.8 ft |           |  19.7 ft |           |  32.2 ft/s |         | 360°    |         | ASME B30.5 |     |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|-------------------------------------------------------------------------------------|--|
|                         |           |  42.3 ft |           |                                                                                           |           |  126.0 ft |         |         |         |            |     |  |  |
| 0,3° 1°                                                                                                                                                                                   |           | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |                                                                                     |  |
| 0°                                                                                                                                                                                        |           | 18°                                                                                       | 36°       | 1,000 lb                                                                                  |           | 0°                                                                                           | 18°     | 36°     |         |            |     |                                                                                     |  |
| ft                                                                                                                                                                                        |           |                                                                                           |           |                                                                                           |           |                                                                                              |         |         |         |            |     | ft                                                                                  |  |
| 14                                                                                                                                                                                        | 44.5 37.4 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 14  |                                                                                     |  |
| 16                                                                                                                                                                                        | 43.0 36.4 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 16  |                                                                                     |  |
| 18                                                                                                                                                                                        | 41.6 35.3 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 18  |                                                                                     |  |
| 20                                                                                                                                                                                        | 40.1 34.2 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 20  |                                                                                     |  |
| 24                                                                                                                                                                                        | 37.4 32.1 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 24  |                                                                                     |  |
| 28                                                                                                                                                                                        | 34.9 30.3 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 28  |                                                                                     |  |
| 32                                                                                                                                                                                        | 32.6 28.5 | 25.5 -                                                                                    | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 32  |                                                                                     |  |
| 36                                                                                                                                                                                        | 30.6 27.0 | 24.1 21.8                                                                                 | - -       | - -                                                                                       | 30.0 24.8 | - -                                                                                          | - -     | - -     | - -     | - -        | 36  |                                                                                     |  |
| 40                                                                                                                                                                                        | 28.6 25.6 | 22.8 20.8                                                                                 | - -       | - -                                                                                       | 29.2 24.1 | - -                                                                                          | - -     | - -     | - -     | - -        | 40  |                                                                                     |  |
| 48                                                                                                                                                                                        | 25.5 23.3 | 20.7 19.0                                                                                 | 16.3 15.8 | 27.6 22.9                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | - -        | 48  |                                                                                     |  |
| 56                                                                                                                                                                                        | 23.0 21.2 | 18.9 17.5                                                                                 | 14.6 14.6 | 26.0 21.8                                                                                 | 20.6 18.4 | - -                                                                                          | - -     | - -     | - -     | - -        | 56  |                                                                                     |  |
| 64                                                                                                                                                                                        | 20.7 19.3 | 17.3 16.3                                                                                 | 13.4 13.4 | 24.5 20.7                                                                                 | 19.4 17.6 | - -                                                                                          | - -     | - -     | - -     | - -        | 64  |                                                                                     |  |
| 72                                                                                                                                                                                        | 18.6 17.9 | 15.7 15.2                                                                                 | 12.6 12.6 | 21.2 19.6                                                                                 | 18.5 16.8 | 15.0 13.9                                                                                    | - -     | - -     | - -     | - -        | 72  |                                                                                     |  |
| 80                                                                                                                                                                                        | 16.7 16.7 | 14.4 14.4                                                                                 | - -       | 17.8 17.7                                                                                 | 17.7 16.0 | 14.4 13.4                                                                                    | - -     | - -     | - -     | - -        | 80  |                                                                                     |  |
| 88                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 15.1 15.1                                                                                 | 16.1 15.2 | 13.7 13.0                                                                                    | - -     | - -     | - -     | - -        | 88  |                                                                                     |  |
| 96                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 12.9 12.9                                                                                 | 14.0 13.7 | 13.3 12.6                                                                                    | - -     | - -     | - -     | - -        | 96  |                                                                                     |  |
| 104                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 11.2 11.2                                                                                 | 11.7 11.7 | 12.4 12.2                                                                                    | - -     | - -     | - -     | - -        | 104 |                                                                                     |  |
| 112                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 9.8 9.8                                                                                   | 10.3 10.3 | 10.7 10.7                                                                                    | - -     | - -     | - -     | - -        | 112 |                                                                                     |  |
| 120                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 8.2 8.2                                                                                   | 9.0 9.0   | 9.5 9.5                                                                                      | - -     | - -     | - -     | - -        | 120 |                                                                                     |  |
| 128                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 7.3 7.3                                                                                   | 7.8 7.8   | 8.2 8.2                                                                                      | - -     | - -     | - -     | - -        | 128 |                                                                                     |  |
| 136                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 6.0 6.0                                                                                   | 6.7 6.7   | 6.9 6.9                                                                                      | - -     | - -     | - -     | - -        | 136 |                                                                                     |  |
| 144                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 5.1 5.1                                                                                   | 5.6 5.6   | 6.0 6.0                                                                                      | - -     | - -     | - -     | - -        | 144 |                                                                                     |  |
| 152                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 4.1 4.1                                                                                   | 4.7 4.7   | - -                                                                                          | - -     | - -     | - -     | - -        | 152 |                                                                                     |  |
| 160                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 3.4 3.4                                                                                   | 3.7 3.7   | - -                                                                                          | - -     | - -     | - -     | - -        | 160 |                                                                                     |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      |      |      | ft                                                                                    |  |
| 56                                                                                  |                                                                                     | 18.6                                                                                         | 15.7 | -    | -    | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 18.2                                                                                         | 15.7 | -    | -    | -    | -    | 15.7                                                                                           | 12.3 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 17.6                                                                                         | 15.7 | -    | -    | -    | -    | 15.2                                                                                           | 12.3 | -    | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 14.8                                                                                         | 14.3 | 15.5 | 14.0 | -    | -    | 13.4                                                                                           | 12.2 | 14.2 | -    | -    | -    | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 12.4                                                                                         | 12.4 | 14.0 | 13.3 | 12.6 | 12.0 | 10.6                                                                                           | 10.6 | 12.8 | 12.2 | -    | -    | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 10.1                                                                                         | 10.1 | 11.6 | 11.6 | 12.1 | 11.8 | 8.4                                                                                            | 8.4  | 10.8 | 10.8 | 11.2 | 11.1 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 8.2                                                                                          | 8.2  | 9.9  | 9.9  | 11.2 | 11.1 | 6.6                                                                                            | 6.6  | 8.6  | 8.6  | 10.5 | 10.5 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 6.5                                                                                          | 6.5  | 8.3  | 8.3  | 9.4  | 9.4  | 5.0                                                                                            | 5.0  | 7.0  | 7.0  | 8.7  | 8.7  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 5.0                                                                                          | 5.0  | 6.7  | 6.7  | 8.2  | 8.2  | 3.7                                                                                            | 3.7  | 5.4  | 5.4  | 6.9  | 6.9  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 4.0                                                                                          | 4.0  | 5.4  | 5.4  | 6.7  | 6.7  | -                                                                                              | -    | 4.1  | 4.1  | 5.4  | 5.4  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 2.9                                                                                          | 2.9  | 4.2  | 4.2  | 5.2  | 5.2  | -                                                                                              | -    | 2.9  | 2.9  | 4.2  | 4.2  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | 3.1  | 3.1  | 4.0  | 4.0  | -                                                                                              | -    | -    | -    | 3.1  | 3.1  | 144                                                                                   |  |

# HAV-HY

|  33,100 lb +  33,100 lb |      |  75.5 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|----|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |     |    |
|                                                                                                                                                                                           |      | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |                                                                                     |     |    |
|                                                                                                                                                                                           |      | 0°                                                                                        |      |                                                                                           |      |                                                                                              |      |      |      |            |      |                                                                                     |     |    |
| ft                                                                                                                                                                                        |      |                                                                                           |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |    |
|                                                                                                                                                                                           |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      |                                                                                     |     | ft |
| 18                                                                                                                                                                                        | 27.7 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 18  |    |
| 20                                                                                                                                                                                        | 27.0 | 23.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 20  |    |
| 24                                                                                                                                                                                        | 25.9 | 22.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 24  |    |
| 28                                                                                                                                                                                        | 24.5 | 21.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 28  |    |
| 32                                                                                                                                                                                        | 23.4 | 20.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 32  |    |
| 36                                                                                                                                                                                        | 22.2 | 19.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 36  |    |
| 40                                                                                                                                                                                        | 21.0 | 18.4                                                                                      | 17.9 | -                                                                                         | -    | -                                                                                            | 19.5 | 17.1 | -    | -          | -    | -                                                                                   | 40  |    |
| 48                                                                                                                                                                                        | 18.9 | 16.8                                                                                      | 16.2 | 14.6                                                                                      | -    | -                                                                                            | 18.5 | 16.3 | -    | -          | -    | -                                                                                   | 48  |    |
| 56                                                                                                                                                                                        | 17.2 | 15.3                                                                                      | 14.8 | 13.4                                                                                      | -    | -                                                                                            | 17.7 | 15.5 | -    | -          | -    | -                                                                                   | 56  |    |
| 64                                                                                                                                                                                        | 15.5 | 14.1                                                                                      | 13.7 | 12.3                                                                                      | 10.4 | 10.3                                                                                         | 16.9 | 14.9 | 14.3 | -          | -    | -                                                                                   | 64  |    |
| 72                                                                                                                                                                                        | 14.4 | 13.0                                                                                      | 12.6 | 11.5                                                                                      | 9.5  | 9.5                                                                                          | 16.1 | 14.1 | 13.5 | 12.1       | -    | -                                                                                   | 72  |    |
| 80                                                                                                                                                                                        | 13.1 | 12.2                                                                                      | 11.3 | 10.9                                                                                      | 8.7  | 8.7                                                                                          | 15.3 | 13.5 | 12.9 | 11.6       | 10.1 | 9.4                                                                                 | 80  |    |
| 88                                                                                                                                                                                        | 12.2 | 11.4                                                                                      | 10.4 | 10.2                                                                                      | 8.2  | 8.2                                                                                          | 14.2 | 12.8 | 12.2 | 11.1       | 9.7  | 9.2                                                                                 | 88  |    |
| 96                                                                                                                                                                                        | 11.1 | 10.6                                                                                      | 9.5  | 9.5                                                                                       | 7.8  | 7.8                                                                                          | 12.7 | 12.3 | 11.6 | 10.7       | 9.2  | 8.9                                                                                 | 96  |    |
| 104                                                                                                                                                                                       | 10.1 | 10.0                                                                                      | 8.9  | 8.9                                                                                       | -    | -                                                                                            | 10.9 | 10.9 | 11.1 | 10.2       | 8.9  | 8.6                                                                                 | 104 |    |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.4  | 9.4  | 10.5 | 9.9        | 8.6  | 8.4                                                                                 | 112 |    |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.3  | 8.3  | 8.9  | 8.9        | 8.3  | 8.1                                                                                 | 120 |    |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.2  | 7.2  | 7.8  | 7.8        | 8.0  | 7.8                                                                                 | 128 |    |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.1  | 6.1  | 6.7  | 6.7        | 7.4  | 7.4                                                                                 | 136 |    |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.3  | 5.3  | 5.8  | 5.8        | 6.2  | 6.2                                                                                 | 144 |    |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.3  | 4.3  | 5.0  | 5.0        | 5.6  | 5.6                                                                                 | 152 |    |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.5  | 3.5  | 4.2  | 4.2        | 4.6  | 4.6                                                                                 | 160 |    |
| 168                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 3.3  | 3.3        | -    | -                                                                                   | 168 |    |
| 176                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.5  | 2.5        | -    | -                                                                                   | 176 |    |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |          |     |  196.9 ft |     |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|----------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3°     | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°      |     | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |     | 1,000 lb |     |                                                                                                |     |      |     | ft   |     |                                                                                       |  |
| 64                                                                                  |                                                                                     | 12.8                                                                                         | 11.0 | -    | -   | -        | -   | -                                                                                              | -   | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 12.4                                                                                         | 11.0 | -    | -   | -        | -   | 11.2                                                                                           | 8.8 | -    | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 12.0                                                                                         | 11.0 | -    | -   | -        | -   | 11.0                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 11.2                                                                                         | 10.5 | 10.5 | 9.6 | -        | -   | 10.0                                                                                           | 8.8 | -    | -   | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 9.5                                                                                          | 9.4  | 10.2 | 9.3 | -        | -   | 7.7                                                                                            | 7.7 | 9.6  | 8.7 | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 7.5                                                                                          | 7.5  | 9.4  | 9.1 | 8.6      | -   | 5.9                                                                                            | 5.9 | 8.5  | 8.4 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 5.9                                                                                          | 5.9  | 8.3  | 8.3 | 8.4      | 7.7 | 4.3                                                                                            | 4.3 | 7.0  | 7.0 | 7.9  | 7.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 4.6                                                                                          | 4.6  | 6.7  | 6.7 | 7.9      | 7.4 | 3.1                                                                                            | 3.1 | 5.4  | 5.4 | 7.5  | 7.1 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 3.5                                                                                          | 3.5  | 5.4  | 5.4 | 6.9      | 6.8 | -                                                                                              | -   | 4.1  | 4.1 | 6.2  | 6.2 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 2.4                                                                                          | 2.4  | 4.2  | 4.2 | 6.0      | 6.0 | -                                                                                              | -   | 2.9  | 2.9 | 4.9  | 4.9 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | 3.1  | 3.1 | 4.7      | 4.7 | -                                                                                              | -   | -    | -   | 3.6  | 3.6 | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 3.6      | 3.6 | -                                                                                              | -   | -    | -   | -    | -   | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 2.7      | 2.7 | -                                                                                              | -   | -    | -   | -    | -   | 160                                                                                   |  |



# HAV-HY

|  11,000 lb +  33,100 lb |  |          |  16.4 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|
|                         |  |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |
|                                                                                                                                                                                           |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |
|                                                                                                                                                                                           |  | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            | 36°  |      |
| ft                                                                                                                                                                                        |  | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft   |      |
| 10                                                                                                                                                                                        |  | 119.2    | 105.7                                                                                     | 89.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10   |
| 12                                                                                                                                                                                        |  | 113.1    | 101.2                                                                                     | 85.9 | 80.0                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 12   |
| 14                                                                                                                                                                                        |  | 107.3    | 97.2                                                                                      | 82.9 | 77.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 14   |
| 16                                                                                                                                                                                        |  | 102.0    | 93.4                                                                                      | 80.1 | 75.4                                                                                      | 65.7 | 61.8                                                                                         | -    | -    | -    | -          | -    | 16   |
| 18                                                                                                                                                                                        |  | 97.4     | 90.0                                                                                      | 77.8 | 73.4                                                                                      | 64.4 | 60.7                                                                                         | -    | -    | -    | -          | -    | 18   |
| 20                                                                                                                                                                                        |  | 93.1     | 86.8                                                                                      | 75.5 | 71.4                                                                                      | 63.1 | 59.6                                                                                         | -    | -    | -    | -          | -    | 20   |
| 24                                                                                                                                                                                        |  | 85.8     | 81.2                                                                                      | 71.6 | 68.0                                                                                      | 60.2 | 57.9                                                                                         | -    | -    | -    | -          | -    | 24   |
| 28                                                                                                                                                                                        |  | 79.5     | 76.4                                                                                      | 67.6 | 65.3                                                                                      | 57.2 | 56.3                                                                                         | 62.6 | 56.3 | -    | -          | -    | 28   |
| 32                                                                                                                                                                                        |  | 68.4     | 67.7                                                                                      | 63.4 | 62.4                                                                                      | 54.9 | 54.1                                                                                         | 54.7 | 49.4 | 55.5 | 46.5       | -    | 32   |
| 36                                                                                                                                                                                        |  | 56.8     | 56.8                                                                                      | 55.9 | 55.4                                                                                      | 52.1 | 51.6                                                                                         | 47.7 | 43.5 | 47.8 | 45.0       | 48.0 | -    |
| 40                                                                                                                                                                                        |  | 46.5     | 46.5                                                                                      | 47.6 | 47.6                                                                                      | -    | -                                                                                            | 40.9 | 38.8 | 42.8 | 39.2       | 42.6 | 40.7 |
| 48                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 32.8 | 31.8 | 33.0 | 31.9       | 34.2 | 32.2 |
| 56                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 26.3 | 25.8 | 26.7 | 26.6       | 27.1 | 26.7 |
| 64                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 20.9 | 20.9 | 21.4 | 21.4       | 21.9 | 21.9 |
| 72                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 16.4 | 16.4 | 17.1 | 17.1       | 17.5 | 17.5 |
| 80                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.0 | 13.0 | 13.6 | 13.6       | 14.0 | 14.0 |
| 88                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.4 | 10.4 | 10.9 | 10.9       | 11.1 | 11.1 |
| 96                                                                                                                                                                                        |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.3  | 8.3  | 8.6  | 8.6        | 8.8  | 8.8  |
| 104                                                                                                                                                                                       |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.4  | 6.4  | 6.8  | 6.8        | 6.8  | 6.8  |
| 112                                                                                                                                                                                       |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.0  | 5.0  | 5.2  | 5.2        | -    | -    |
| 120                                                                                                                                                                                       |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.7  | 3.7  | 3.9  | 3.9        | -    | -    |
| 128                                                                                                                                                                                       |  | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.8  | 2.8  | -    | -          | -    | -    |

|   |           |  181.1 ft |           |           |           |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°   | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°        | 18°       | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |           |           |                                                                                                |         |         |         | ft                                                                                    |     |
| 48                                                                                                                                                                      | 26.5 24.6 | - -                                                                                          | - -       | - -       | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 48  |
| 56                                                                                                                                                                      | 20.5 19.6 | 21.7 20.7                                                                                    | 22.9 21.7 | 18.4 17.5 | 19.6 -    | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 56  |
| 64                                                                                                                                                                      | 16.0 15.5 | 17.0 16.5                                                                                    | 17.9 17.3 | 14.0 13.7 | 15.1 14.6 | 16.1 15.5                                                                                      | - -     | - -     | - -     | - -                                                                                   | 64  |
| 72                                                                                                                                                                      | 12.4 12.4 | 13.3 13.1                                                                                    | 14.0 14.0 | 10.4 10.4 | 11.5 11.5 | 12.2 12.2                                                                                      | - -     | - -     | - -     | - -                                                                                   | 72  |
| 80                                                                                                                                                                      | 9.5 9.5   | 10.4 10.4                                                                                    | 11.0 11.0 | 7.8 7.8   | 8.7 8.7   | 9.3 9.3                                                                                        | - -     | - -     | - -     | - -                                                                                   | 80  |
| 88                                                                                                                                                                      | 7.0 7.0   | 7.9 7.9                                                                                      | 8.4 8.4   | 5.4 5.4   | 6.3 6.3   | 6.9 6.9                                                                                        | - -     | - -     | - -     | - -                                                                                   | 88  |
| 96                                                                                                                                                                      | 5.1 5.1   | 5.7 5.7                                                                                      | 6.2 6.2   | 3.6 3.6   | 4.3 4.3   | 4.8 4.8                                                                                        | - -     | - -     | - -     | - -                                                                                   | 96  |
| 104                                                                                                                                                                     | 3.3 3.3   | 3.9 3.9                                                                                      | 4.4 4.4   | - -       | 2.6 2.6   | 3.1 3.1                                                                                        | - -     | - -     | - -     | - -                                                                                   | 104 |

# HAV-HY

|  11,000 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  19.7 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1 | 39.7 | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 43.0 | 37.9 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 40.5 | 36.4 | 35.3       | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 34.5                                                                                      | 32.3 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 31.7 | 30.1 | 32.2       | 28.4 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 29.0                                                                                      | 28.3 | 26.5                                                                                      | 26.2 | 21.7                                                                                         | 21.7 | 26.1 | 25.0 | 27.3       | 25.3 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 23.1                                                                                      | 23.1 | 23.4                                                                                      | 23.4 | -                                                                                            | -    | 21.3 | 20.9 | 22.2       | 21.3 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.3 | 17.3 | 17.7       | 17.7 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.9 | 13.9 | 15.0       | 15.0 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.3 | 11.3 | 12.4       | 12.4 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.0  | 9.0  | 10.0       | 10.0 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.3  | 7.3  | 7.9        | 7.9  | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.7  | 5.7  | 6.3        | 6.3  | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.4  | 4.4  | 5.0        | 5.0  | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.3  | 3.3  | 3.9        | 3.9  | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 2.4  | 2.4  | 2.8        | 2.8  | 136                                                                                 |     |

|   |           |  181.1 ft |           |           |         |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°   | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°        | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |           |         |                                                                                                |         |         |         | ft                                                                                    |     |
| 56                                                                                                                                                                      | 20.6 18.9 | - -                                                                                          | - -       | 18.5 16.2 | - -     | - -                                                                                            | - -     | - -     | - -     | 56                                                                                    | 56  |
| 64                                                                                                                                                                      | 16.2 15.5 | 18.3 -                                                                                       | - -       | 14.3 13.5 | - -     | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 12.4 12.2 | 14.4 14.2                                                                                    | - -       | 10.7 10.6 | 12.9 -  | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 9.5 9.5   | 11.3 11.3                                                                                    | 13.0 12.8 | 7.8 7.8   | 9.7 9.7 | 11.5 11.3                                                                                      | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 7.1 7.1   | 8.8 8.8                                                                                      | 10.2 10.2 | 5.4 5.4   | 7.2 7.2 | 8.9 8.9                                                                                        | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 5.2 5.2   | 6.6 6.6                                                                                      | 7.9 7.9   | 3.6 3.6   | 5.2 5.2 | 6.6 6.6                                                                                        | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 3.5 3.5   | 4.8 4.8                                                                                      | 6.0 6.0   | - -       | 3.5 3.5 | 4.6 4.6                                                                                        | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | - -       | 3.5 3.5                                                                                      | 4.3 4.3   | - -       | - -     | - -                                                                                            | - -     | - -     | - -     | 112                                                                                   | 112 |
| 120                                                                                                                                                                     | - -       | - -                                                                                          | 3.0 3.0   | - -       | - -     | - -                                                                                            | - -     | - -     | - -     | 120                                                                                   | 120 |

# HAV-HY

|  11,000 lb +  33,100 lb |                                                                                   |      |  55.8 ft |      |  19.7 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|
|                                                                                                                                                                                           |                                                                                   |      |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |      |      |
|                                                                                                          |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |
|                                                                                                                                                                                           |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            | 36°  |      |
| ft                                                                                                                                                                                        |                                                                                   |      |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft   |      |
| 14                                                                                                                                                                                        |                                                                                   | 44.5 | 37.4                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 14   |
| 16                                                                                                                                                                                        |                                                                                   | 43.0 | 36.4                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 16   |
| 18                                                                                                                                                                                        |                                                                                   | 41.6 | 35.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 18   |
| 20                                                                                                                                                                                        |                                                                                   | 40.1 | 34.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 20   |
| 24                                                                                                                                                                                        |                                                                                   | 37.4 | 32.1                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 24   |
| 28                                                                                                                                                                                        |                                                                                   | 34.9 | 30.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 28   |
| 32                                                                                                                                                                                        |                                                                                   | 32.6 | 28.5                                                                                      | 25.5 | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 32   |
| 36                                                                                                                                                                                        |                                                                                   | 30.6 | 27.0                                                                                      | 24.1 | 21.8                                                                                      | -        | -                                                                                            | 30.0 | 24.8 | -    | -          | -    | 36   |
| 40                                                                                                                                                                                        |                                                                                   | 28.6 | 25.6                                                                                      | 22.8 | 20.8                                                                                      | -        | -                                                                                            | 29.2 | 24.1 | -    | -          | -    | 40   |
| 48                                                                                                                                                                                        |                                                                                   | 25.5 | 23.3                                                                                      | 20.7 | 19.0                                                                                      | 16.3     | 15.8                                                                                         | 27.2 | 22.9 | -    | -          | -    | 48   |
| 56                                                                                                                                                                                        |                                                                                   | 23.0 | 21.2                                                                                      | 18.9 | 17.5                                                                                      | 14.6     | 14.6                                                                                         | 24.1 | 21.6 | 20.6 | 18.4       | -    | 56   |
| 64                                                                                                                                                                                        |                                                                                   | 20.7 | 19.3                                                                                      | 17.3 | 16.3                                                                                      | 13.4     | 13.4                                                                                         | 20.7 | 19.3 | 19.4 | 17.6       | -    | 64   |
| 72                                                                                                                                                                                        |                                                                                   | 18.6 | 17.9                                                                                      | 15.7 | 15.2                                                                                      | 12.6     | 12.6                                                                                         | 16.8 | 16.8 | 18.3 | 16.8       | 15.0 | 13.9 |
| 80                                                                                                                                                                                        |                                                                                   | 16.6 | 16.6                                                                                      | 14.4 | 14.4                                                                                      | -        | -                                                                                            | 14.4 | 14.4 | 15.5 | 15.1       | 14.4 | 13.4 |
| 88                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 12.2 | 12.2 | 13.0 | 13.0       | 13.4 | 13.0 |
| 96                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 9.9  | 9.9  | 11.3 | 11.3       | 11.8 | 11.7 |
| 104                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 8.1  | 8.1  | 9.3  | 9.3        | 10.3 | 10.3 |
| 112                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 6.5  | 6.5  | 7.6  | 7.6        | 8.5  | 8.5  |
| 120                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.2  | 5.2  | 6.3  | 6.3        | 7.0  | 7.0  |
| 128                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 4.1  | 4.1  | 5.0  | 5.0        | 5.6  | 5.6  |
| 136                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.1  | 3.1  | 3.8  | 3.8        | 4.3  | 4.3  |
| 144                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 2.2  | 2.2  | 2.9  | 2.9        | 3.1  | 3.1  |

|   |           |  181.1 ft |           |         |           |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1° | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°      | 18°       | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |         |           |                                                                                                |         |         |         | ft                                                                                    |     |
| 56                                                                                                                                                                      | 18.3 15.7 | - -                                                                                          | - -       | - -     | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 56  |
| 64                                                                                                                                                                      | 15.8 14.7 | - -                                                                                          | - -       | - -     | 13.9 12.3 | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 64  |
| 72                                                                                                                                                                      | 12.2 12.2 | - -                                                                                          | - -       | - -     | 10.4 10.4 | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 72  |
| 80                                                                                                                                                                      | 9.3 9.3   | 12.1 12.1                                                                                    | - -       | - -     | 7.6 7.6   | 10.6 -                                                                                         | - -     | - -     | - -     | - -                                                                                   | 80  |
| 88                                                                                                                                                                      | 7.1 7.1   | 9.5 9.5                                                                                      | 11.4 11.4 | 5.4 5.4 | 8.1 8.1   | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 88  |
| 96                                                                                                                                                                      | 5.2 5.2   | 7.4 7.4                                                                                      | 9.5 9.5   | 3.6 3.6 | 6.1 6.1   | 8.1 8.1                                                                                        | - -     | - -     | - -     | - -                                                                                   | 96  |
| 104                                                                                                                                                                     | 3.7 3.7   | 5.7 5.7                                                                                      | 7.5 7.5   | - -     | 4.2 4.2   | 6.2 6.2                                                                                        | - -     | - -     | - -     | - -                                                                                   | 104 |
| 112                                                                                                                                                                     | - -       | 4.1 4.1                                                                                      | 5.9 5.9   | - -     | - -       | 4.6 4.6                                                                                        | - -     | - -     | - -     | - -                                                                                   | 112 |
| 120                                                                                                                                                                     | - -       | 2.8 2.8                                                                                      | 4.3 4.3   | - -     | - -       | 3.2 3.2                                                                                        | - -     | - -     | - -     | - -                                                                                   | 120 |
| 128                                                                                                                                                                     | - -       | - -                                                                                          | 3.1 3.1   | - -     | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 128 |

# HAV-HY

|  11,000 lb +  33,100 lb |                                                                                   |          |  75.5 ft |         |      |  19.7 ft |      |         |  32.2 ft/s |         |      | 360°    |     | ASME B30.5                                                                          |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|---------|------|-------------------------------------------------------------------------------------------|------|---------|----------------------------------------------------------------------------------------------|---------|------|---------|-----|-------------------------------------------------------------------------------------|-----|--|
|                                                                                                                                                                                           |                                                                                   |          |  42.3 ft |         |      |                                                                                           |      |         |  126.0 ft |         |      |         |     |                                                                                     |     |  |
|                                                                                                          |  | 0,3° 1°  |                                                                                           | 0,3° 1° |      | 0,3° 1°                                                                                   |      | 0,3° 1° |                                                                                              | 0,3° 1° |      | 0,3° 1° |     |                                                                                     |     |  |
|                                                                                                                                                                                           |                                                                                   | 0°       |                                                                                           | 18°     |      | 36°                                                                                       |      | 0°      |                                                                                              | 18°     |      | 36°     |     |  |     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb |                                                                                           |         |      |                                                                                           |      |         |                                                                                              |         |      | ft      |     |                                                                                     |     |  |
| 18                                                                                                                                                                                        |                                                                                   | 27.7     | -                                                                                         | -       | -    | -                                                                                         | -    | -       | -                                                                                            | -       | -    | -       | -   | -                                                                                   | 18  |  |
| 20                                                                                                                                                                                        |                                                                                   | 27.0     | 23.3                                                                                      | -       | -    | -                                                                                         | -    | -       | -                                                                                            | -       | -    | -       | -   | -                                                                                   | 20  |  |
| 24                                                                                                                                                                                        |                                                                                   | 25.9     | 22.2                                                                                      | -       | -    | -                                                                                         | -    | -       | -                                                                                            | -       | -    | -       | -   | -                                                                                   | 24  |  |
| 28                                                                                                                                                                                        |                                                                                   | 24.5     | 21.1                                                                                      | -       | -    | -                                                                                         | -    | -       | -                                                                                            | -       | -    | -       | -   | -                                                                                   | 28  |  |
| 32                                                                                                                                                                                        |                                                                                   | 23.4     | 20.2                                                                                      | -       | -    | -                                                                                         | -    | -       | -                                                                                            | -       | -    | -       | -   | -                                                                                   | 32  |  |
| 36                                                                                                                                                                                        |                                                                                   | 22.2     | 19.3                                                                                      | -       | -    | -                                                                                         | -    | -       | -                                                                                            | -       | -    | -       | -   | -                                                                                   | 36  |  |
| 40                                                                                                                                                                                        |                                                                                   | 21.0     | 18.4                                                                                      | 17.9    | -    | -                                                                                         | -    | 19.5    | 17.1                                                                                         | -       | -    | -       | -   | -                                                                                   | 40  |  |
| 48                                                                                                                                                                                        |                                                                                   | 18.9     | 16.8                                                                                      | 16.2    | 14.6 | -                                                                                         | -    | 18.5    | 16.3                                                                                         | -       | -    | -       | -   | -                                                                                   | 48  |  |
| 56                                                                                                                                                                                        |                                                                                   | 17.2     | 15.3                                                                                      | 14.8    | 13.4 | -                                                                                         | -    | 17.7    | 15.5                                                                                         | -       | -    | -       | -   | -                                                                                   | 56  |  |
| 64                                                                                                                                                                                        |                                                                                   | 15.5     | 14.1                                                                                      | 13.7    | 12.3 | 10.4                                                                                      | 10.3 | 16.9    | 14.9                                                                                         | 14.3    | -    | -       | -   | -                                                                                   | 64  |  |
| 72                                                                                                                                                                                        |                                                                                   | 14.4     | 13.0                                                                                      | 12.6    | 11.5 | 9.5                                                                                       | 9.5  | 15.5    | 14.1                                                                                         | 13.5    | 12.1 | -       | -   | -                                                                                   | 72  |  |
| 80                                                                                                                                                                                        |                                                                                   | 13.1     | 12.2                                                                                      | 11.3    | 10.9 | 8.7                                                                                       | 8.7  | 13.5    | 12.9                                                                                         | 12.9    | 11.6 | 10.1    | 9.4 | -                                                                                   | 80  |  |
| 88                                                                                                                                                                                        |                                                                                   | 12.2     | 11.4                                                                                      | 10.4    | 10.2 | 8.2                                                                                       | 8.2  | 11.8    | 11.7                                                                                         | 12.0    | 11.1 | 9.7     | 9.2 | -                                                                                   | 88  |  |
| 96                                                                                                                                                                                        |                                                                                   | 11.1     | 10.6                                                                                      | 9.5     | 9.5  | 7.8                                                                                       | 7.8  | 9.8     | 9.8                                                                                          | 10.9    | 10.4 | 9.2     | 8.9 | -                                                                                   | 96  |  |
| 104                                                                                                                                                                                       |                                                                                   | 10.1     | 10.0                                                                                      | 8.9     | 8.9  | -                                                                                         | -    | 8.1     | 8.1                                                                                          | 9.6     | 9.5  | 8.9     | 8.6 | -                                                                                   | 104 |  |
| 112                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -       | -    | -                                                                                         | -    | 6.6     | 6.6                                                                                          | 8.3     | 8.3  | 8.5     | 8.1 | -                                                                                   | 112 |  |
| 120                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -       | -    | -                                                                                         | -    | 5.4     | 5.4                                                                                          | 6.7     | 6.7  | 7.5     | 7.5 | -                                                                                   | 120 |  |
| 128                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -       | -    | -                                                                                         | -    | 4.3     | 4.3                                                                                          | 5.5     | 5.5  | 6.5     | 6.5 | -                                                                                   | 128 |  |
| 136                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -       | -    | -                                                                                         | -    | 3.3     | 3.3                                                                                          | 4.4     | 4.4  | 5.3     | 5.3 | -                                                                                   | 136 |  |
| 144                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -       | -    | -                                                                                         | -    | 2.5     | 2.5                                                                                          | 3.4     | 3.4  | 4.2     | 4.2 | -                                                                                   | 144 |  |
| 152                                                                                                                                                                                       |                                                                                   | -        | -                                                                                         | -       | -    | -                                                                                         | -    | -       | -                                                                                            | -       | -    | 3.2     | 3.2 | -                                                                                   | 152 |  |

|   |           |  181.1 ft |         |         |         |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°     | 0°      | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |         |         |         |                                                                                                |         |         |         | ft                                                                                    |     |
| 64                                                                                                                                                                      | 12.8 11.0 | - -                                                                                          | - -     | - -     | - -     | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 11.3 10.8 | - -                                                                                          | - -     | - -     | 9.3 8.8 | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 8.7 8.7   | - -                                                                                          | - -     | - -     | 6.7 6.7 | - -                                                                                            | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 6.4 6.4   | 9.6 9.1                                                                                      | - -     | - -     | 4.7 4.7 | - -                                                                                            | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 4.7 4.7   | 7.5 7.5                                                                                      | - -     | - -     | 2.9 2.9 | 6.1 6.1                                                                                        | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 3.1 3.1   | 5.7 5.7                                                                                      | 8.0 -   | - -     | - -     | 4.4 4.4                                                                                        | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | - -       | 4.1 4.1                                                                                      | 6.5 6.5 | - -     | - -     | - -                                                                                            | 5.4 -   | - -     | - -     | 112                                                                                   | 112 |
| 120                                                                                                                                                                     | - -       | 3.0 3.0                                                                                      | 5.0 5.0 | - -     | - -     | - -                                                                                            | 3.9 -   | - -     | - -     | 120                                                                                   | 120 |
| 128                                                                                                                                                                     | - -       | - -                                                                                          | 3.7 3.7 | - -     | - -     | - -                                                                                            | - -     | - -     | - -     | 128                                                                                   | 128 |
| 136                                                                                                                                                                     | - -       | - -                                                                                          | 2.7 2.7 | - -     | - -     | - -                                                                                            | - -     | - -     | - -     | 136                                                                                   | 136 |

# HAV-HY

|  0 lb + 33,100 lb |                                                                                   |          |  16.4 ft |      |  19.7 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                    |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |
|                   |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                    |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                 |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft                                                                                  |
| 10                                                                                                 |                                                                                   | 119.2    | 105.7                                                                                     | 89.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |
| 12                                                                                                 |                                                                                   | 113.1    | 101.2                                                                                     | 85.9 | 80.0                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |
| 14                                                                                                 |                                                                                   | 107.3    | 97.2                                                                                      | 82.9 | 77.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                 |                                                                                   | 102.0    | 93.4                                                                                      | 80.1 | 75.4                                                                                      | 65.7 | 61.8                                                                                         | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                 |                                                                                   | 97.4     | 90.0                                                                                      | 77.8 | 73.4                                                                                      | 64.4 | 60.7                                                                                         | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                 |                                                                                   | 93.1     | 86.8                                                                                      | 75.5 | 71.4                                                                                      | 63.1 | 59.6                                                                                         | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                 |                                                                                   | 85.8     | 81.2                                                                                      | 71.6 | 68.0                                                                                      | 60.2 | 57.9                                                                                         | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                 |                                                                                   | 75.2     | 73.5                                                                                      | 67.6 | 65.3                                                                                      | 57.2 | 56.3                                                                                         | 56.5 | 50.6 | -    | -          | 28                                                                                  |
| 32                                                                                                 |                                                                                   | 60.1     | 60.1                                                                                      | 60.8 | 60.4                                                                                      | 54.9 | 54.1                                                                                         | 48.4 | 44.7 | 49.8 | 44.5       | 32                                                                                  |
| 36                                                                                                 |                                                                                   | 49.4     | 49.4                                                                                      | 50.9 | 50.9                                                                                      | 49.0 | 48.5                                                                                         | 42.4 | 39.6 | 42.8 | 40.1       | 36                                                                                  |
| 40                                                                                                 |                                                                                   | 40.3     | 40.3                                                                                      | 41.3 | 41.3                                                                                      | -    | -                                                                                            | 37.6 | 35.1 | 38.0 | 35.7       | 40                                                                                  |
| 48                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 29.7 | 27.7 | 30.2 | 28.8       | 48                                                                                  |
| 56                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 22.7 | 22.1 | 23.8 | 23.1       | 56                                                                                  |
| 64                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 17.3 | 17.3 | 18.2 | 18.2       | 64                                                                                  |
| 72                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.3 | 13.3 | 14.0 | 14.0       | 72                                                                                  |
| 80                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.4 | 10.4 | 10.9 | 10.9       | 80                                                                                  |
| 88                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.0  | 8.0  | 8.5  | 8.5        | 88                                                                                  |
| 96                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.1  | 6.1  | 6.5  | 6.5        | 96                                                                                  |
| 104                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.4  | 4.4  | 4.8  | 4.8        | 104                                                                                 |
| 112                                                                                                |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.2  | 3.2  | 3.5  | 3.5        | 112                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      |      |      | ft                                                                                    |  |
| 48                                                                                  |                                                                                     | 21.7                                                                                         | 20.4 | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 16.5                                                                                         | 15.9 | 17.7 | 16.9 | 18.7     | 17.8 | 14.3                                                                                           | 13.8 | 15.6 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.4                                                                                         | 12.2 | 13.4 | 13.1 | 14.3     | 13.9 | 10.4                                                                                           | 10.4 | 11.6 | 11.5 | 12.4 | 12.4 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 9.1                                                                                          | 9.1  | 10.0 | 10.0 | 10.9     | 10.9 | 7.3                                                                                            | 7.3  | 8.2  | 8.2  | 9.1  | 9.1  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 6.5                                                                                          | 6.5  | 7.3  | 7.3  | 8.0      | 8.0  | 5.0                                                                                            | 5.0  | 5.8  | 5.8  | 6.5  | 6.5  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 4.4                                                                                          | 4.4  | 5.1  | 5.1  | 5.7      | 5.7  | -                                                                                              | -    | 3.6  | 3.6  | 4.2  | 4.2  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | -                                                                                            | -    | 3.4  | 3.4  | 3.8      | 3.8  | -                                                                                              | -    | -    | -    | -    | -    | 96                                                                                    |  |



# HAV-HY

|  0 lb +  33,100 lb |                                                                                   |      |  36.1 ft |      |  19.7 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                     |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                      |                                                                                   |      |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |                                                                                     |     |
|                                                                                                     |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |     |
|                                                                                                                                                                                      |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            |                                                                                     | 36° |
| ft                                                                                                                                                                                   |                                                                                   |      |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft                                                                                  |     |
| 10                                                                                                                                                                                   |                                                                                   | 72.7 | 59.8                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |     |
| 12                                                                                                                                                                                   |                                                                                   | 69.1 | 57.4                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |     |
| 14                                                                                                                                                                                   |                                                                                   | 65.8 | 55.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |     |
| 16                                                                                                                                                                                   |                                                                                   | 62.8 | 53.1                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 16                                                                                  |     |
| 18                                                                                                                                                                                   |                                                                                   | 60.0 | 51.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |     |
| 20                                                                                                                                                                                   |                                                                                   | 57.4 | 49.3                                                                                      | 44.3 | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |     |
| 24                                                                                                                                                                                   |                                                                                   | 52.7 | 45.9                                                                                      | 41.2 | 37.6                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |     |
| 28                                                                                                                                                                                   |                                                                                   | 48.7 | 42.9                                                                                      | 38.7 | 35.4                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |     |
| 32                                                                                                                                                                                   |                                                                                   | 45.2 | 40.2                                                                                      | 36.6 | 33.6                                                                                      | 28.2     | 26.3                                                                                         | 45.1 | 39.0 | -    | -          | 32                                                                                  |     |
| 36                                                                                                                                                                                   |                                                                                   | 42.1 | 37.9                                                                                      | 34.7 | 32.1                                                                                      | 27.0     | 25.4                                                                                         | 40.1 | 35.5 | -    | -          | 36                                                                                  |     |
| 40                                                                                                                                                                                   |                                                                                   | 39.0 | 35.7                                                                                      | 32.8 | 30.7                                                                                      | 25.8     | 24.6                                                                                         | 35.9 | 33.6 | 34.9 | -          | 40                                                                                  |     |
| 48                                                                                                                                                                                   |                                                                                   | 32.6 | 31.4                                                                                      | 29.6 | 28.3                                                                                      | 23.3     | 23.0                                                                                         | 28.6 | 27.2 | 29.4 | 27.3       | 48                                                                                  |     |
| 56                                                                                                                                                                                   |                                                                                   | 25.0 | 25.0                                                                                      | 25.5 | 25.2                                                                                      | 21.7     | 21.7                                                                                         | 23.4 | 22.0 | 24.1 | 22.6       | 56                                                                                  |     |
| 64                                                                                                                                                                                   |                                                                                   | 19.5 | 19.5                                                                                      | 20.3 | 20.3                                                                                      | -        | -                                                                                            | 18.4 | 17.8 | 19.3 | 19.2       | 64                                                                                  |     |
| 72                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 14.4 | 14.4 | 16.0 | 16.0       | 72                                                                                  |     |
| 80                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 11.3 | 11.3 | 12.6 | 12.6       | 80                                                                                  |     |
| 88                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 9.0  | 9.0  | 10.0 | 10.0       | 88                                                                                  |     |
| 96                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.0  | 7.0  | 7.8  | 7.8        | 96                                                                                  |     |
| 104                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.3  | 5.3  | 6.2  | 6.2        | 104                                                                                 |     |
| 112                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.9  | 3.9  | 4.6  | 4.6        | 112                                                                                 |     |
| 120                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | -    | -    | 3.3  | 3.3        | 120                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |     |      |     | ft                                                                                    |  |
| 56                                                                                  |                                                                                     | 16.6                                                                                         | 15.5 | -    | -    | -        | -    | 14.5                                                                                           | 13.7 | -    | -   | -    | -   | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.5                                                                                         | 12.1 | 14.9 | -    | -        | -    | 10.7                                                                                           | 10.4 | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 9.1                                                                                          | 9.1  | 11.3 | 11.1 | -        | -    | 7.3                                                                                            | 7.3  | 9.6  | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 6.5                                                                                          | 6.5  | 8.4  | 8.4  | 10.2     | 10.0 | 4.8                                                                                            | 4.8  | 6.9  | 6.9 | 8.6  | 8.6 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 4.4                                                                                          | 4.4  | 6.1  | 6.1  | 7.6      | 7.6  | -                                                                                              | -    | 4.6  | 4.6 | 6.1  | 6.1 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 2.7                                                                                          | 2.7  | 4.2  | 4.2  | 5.4      | 5.4  | -                                                                                              | -    | 2.7  | 2.7 | 4.1  | 4.1 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | -                                                                                            | -    | 2.6  | 2.6  | 3.7      | 3.7  | -                                                                                              | -    | -    | -   | 2.4  | 2.4 | 104                                                                                   |  |



# HAV-HY

|  0 lb +  33,100 lb |                                                                                   |      |  55.8 ft |      |  19.7 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                     |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                      |                                                                                   |      |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |                                                                                     |     |
|                                                                                                     |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |     |
|                                                                                                                                                                                      |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            |                                                                                     | 36° |
| ft                                                                                                                                                                                   |                                                                                   |      |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft                                                                                  |     |
| 14                                                                                                                                                                                   |                                                                                   | 44.5 | 37.4                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |     |
| 16                                                                                                                                                                                   |                                                                                   | 43.0 | 36.4                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 16                                                                                  |     |
| 18                                                                                                                                                                                   |                                                                                   | 41.6 | 35.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |     |
| 20                                                                                                                                                                                   |                                                                                   | 40.1 | 34.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |     |
| 24                                                                                                                                                                                   |                                                                                   | 37.4 | 32.1                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |     |
| 28                                                                                                                                                                                   |                                                                                   | 34.9 | 30.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |     |
| 32                                                                                                                                                                                   |                                                                                   | 32.6 | 28.5                                                                                      | 25.5 | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 32                                                                                  |     |
| 36                                                                                                                                                                                   |                                                                                   | 30.6 | 27.0                                                                                      | 24.1 | 21.8                                                                                      | -        | -                                                                                            | 30.0 | 24.8 | -    | -          | 36                                                                                  |     |
| 40                                                                                                                                                                                   |                                                                                   | 28.6 | 25.6                                                                                      | 22.8 | 20.8                                                                                      | -        | -                                                                                            | 29.0 | 24.1 | -    | -          | 40                                                                                  |     |
| 48                                                                                                                                                                                   |                                                                                   | 25.5 | 23.3                                                                                      | 20.7 | 19.0                                                                                      | 16.3     | 15.8                                                                                         | 25.4 | 22.4 | -    | -          | 48                                                                                  |     |
| 56                                                                                                                                                                                   |                                                                                   | 23.0 | 21.2                                                                                      | 18.9 | 17.5                                                                                      | 14.6     | 14.6                                                                                         | 21.9 | 20.2 | 20.6 | 18.4       | 56                                                                                  |     |
| 64                                                                                                                                                                                   |                                                                                   | 20.7 | 19.3                                                                                      | 17.3 | 16.3                                                                                      | 13.4     | 13.4                                                                                         | 18.3 | 17.7 | 18.8 | 17.4       | 64                                                                                  |     |
| 72                                                                                                                                                                                   |                                                                                   | 17.3 | 17.2                                                                                      | 15.7 | 15.2                                                                                      | 12.6     | 12.6                                                                                         | 14.8 | 14.6 | 16.2 | 15.7       | 72                                                                                  |     |
| 80                                                                                                                                                                                   |                                                                                   | 14.4 | 14.4                                                                                      | 14.3 | 14.3                                                                                      | -        | -                                                                                            | 12.0 | 12.0 | 13.7 | 13.7       | 80                                                                                  |     |
| 88                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 9.6  | 9.6  | 11.4 | 11.4       | 88                                                                                  |     |
| 96                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.8  | 7.8  | 9.2  | 9.2        | 96                                                                                  |     |
| 104                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 6.2  | 6.2  | 7.5  | 7.5        | 104                                                                                 |     |
| 112                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 4.8  | 4.8  | 5.9  | 5.9        | 112                                                                                 |     |
| 120                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.5  | 3.5  | 4.5  | 4.5        | 120                                                                                 |     |
| 128                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | -    | -    | 3.3  | 3.3        | 128                                                                                 |     |
| 136                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 136                                                                                 |     |
|                                                                                                                                                                                      |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | -    | -    | 2.9  | 2.9        | 136                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |          |     |  196.9 ft |      |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|----------|-----|------------------------------------------------------------------------------------------------|------|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3°     | 1°  | 0,3°                                                                                           | 1°   | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°      |     | 0°                                                                                             |      | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |     | 1,000 lb |     |                                                                                                |      |      |    |      |    | ft                                                                                    |  |
| 56                                                                                  |                                                                                     | 16.2                                                                                         | 14.5 | -    | -   | -        | -   | -                                                                                              | -    | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.3                                                                                         | 12.1 | -    | -   | -        | -   | 10.2                                                                                           | 10.1 | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 9.1                                                                                          | 9.1  | -    | -   | -        | -   | 7.1                                                                                            | 7.1  | -    | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 6.5                                                                                          | 6.5  | 9.3  | 9.3 | -        | -   | 4.7                                                                                            | 4.7  | 7.8  | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 4.5                                                                                          | 4.5  | 7.0  | 7.0 | 9.3      | 9.3 | -                                                                                              | -    | 5.4  | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 2.9                                                                                          | 2.9  | 5.0  | 5.0 | 7.0      | 7.0 | -                                                                                              | -    | 3.6  | -  | 5.9  | -  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5 | 5.3      | 5.3 | -                                                                                              | -    | -    | -  | 4.0  | -  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 3.7      | 3.7 | -                                                                                              | -    | -    | -  | -    | -  | 112                                                                                   |  |

# HAV-HY

|  0 lb + 33,100 lb |                                                                                   |          |  75.5 ft |      |      |  19.7 ft |      |      |  32.2 ft/s  |      |      | 360° |     |      | ASME B30.5 |    |     |                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------------|------|------|----------------------------------------------------------------------------------------------|------|------|------|-----|------|------------|----|-----|-------------------------------------------------------------------------------------|
|                                                                                                    |                                                                                   |          |  42.3 ft |      |      |                                                                                           |      |      |  126.0 ft |      |      |      |     |      |            |    |     |                                                                                     |
|                   |  | 0,3°     |                                                                                           | 1°   |      | 0,3°                                                                                      |      | 1°   |                                                                                              | 0,3° |      | 1°   |     | 0,3° |            | 1° |     |  |
|                                                                                                    |                                                                                   | 0°       |                                                                                           | 18°  |      | 36°                                                                                       |      | 0°   |                                                                                              | 18°  |      | 36°  |     |      |            |    |     |                                                                                     |
| ft                                                                                                 |                                                                                   | 1,000 lb |                                                                                           |      |      |                                                                                           |      |      |                                                                                              |      |      |      |     |      |            | ft |     |                                                                                     |
| 18                                                                                                 |                                                                                   | 27.7     | -                                                                                         | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -   | -    | -          | -  | 18  |                                                                                     |
| 20                                                                                                 |                                                                                   | 27.0     | 23.3                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -   | -    | -          | -  | 20  |                                                                                     |
| 24                                                                                                 |                                                                                   | 25.9     | 22.2                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -   | -    | -          | -  | 24  |                                                                                     |
| 28                                                                                                 |                                                                                   | 24.5     | 21.1                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -   | -    | -          | -  | 28  |                                                                                     |
| 32                                                                                                 |                                                                                   | 23.4     | 20.2                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -   | -    | -          | -  | 32  |                                                                                     |
| 36                                                                                                 |                                                                                   | 22.2     | 19.3                                                                                      | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -   | -    | -          | -  | 36  |                                                                                     |
| 40                                                                                                 |                                                                                   | 21.0     | 18.4                                                                                      | 17.9 | -    | -                                                                                         | -    | 19.5 | 17.1                                                                                         | -    | -    | -    | -   | -    | -          | -  | 40  |                                                                                     |
| 48                                                                                                 |                                                                                   | 18.9     | 16.8                                                                                      | 16.2 | 14.6 | -                                                                                         | -    | 18.5 | 16.3                                                                                         | -    | -    | -    | -   | -    | -          | -  | 48  |                                                                                     |
| 56                                                                                                 |                                                                                   | 17.2     | 15.3                                                                                      | 14.8 | 13.4 | -                                                                                         | -    | 17.5 | 15.5                                                                                         | -    | -    | -    | -   | -    | -          | -  | 56  |                                                                                     |
| 64                                                                                                 |                                                                                   | 15.5     | 14.1                                                                                      | 13.7 | 12.3 | 10.4                                                                                      | 10.3 | 16.0 | 14.7                                                                                         | 14.3 | -    | -    | -   | -    | -          | -  | 64  |                                                                                     |
| 72                                                                                                 |                                                                                   | 14.4     | 13.0                                                                                      | 12.6 | 11.5 | 9.5                                                                                       | 9.5  | 14.1 | 13.5                                                                                         | 13.5 | 12.1 | -    | -   | -    | -          | -  | 72  |                                                                                     |
| 80                                                                                                 |                                                                                   | 13.1     | 12.2                                                                                      | 11.3 | 10.9 | 8.7                                                                                       | 8.7  | 11.3 | 11.3                                                                                         | 12.5 | 11.4 | 10.1 | 9.4 | -    | -          | -  | 80  |                                                                                     |
| 88                                                                                                 |                                                                                   | 12.2     | 11.4                                                                                      | 10.4 | 10.2 | 8.2                                                                                       | 8.2  | 9.2  | 9.2                                                                                          | 11.0 | 10.7 | 9.7  | 9.2 | -    | -          | -  | 88  |                                                                                     |
| 96                                                                                                 |                                                                                   | 10.7     | 10.5                                                                                      | 9.5  | 9.5  | 7.8                                                                                       | 7.8  | 7.3  | 7.3                                                                                          | 9.5  | 9.4  | 9.2  | 8.9 | -    | -          | -  | 96  |                                                                                     |
| 104                                                                                                |                                                                                   | 9.2      | 9.2                                                                                       | 8.9  | 8.9  | -                                                                                         | -    | 5.9  | 5.9                                                                                          | 7.7  | 7.7  | 8.7  | 8.4 | -    | -          | -  | 104 |                                                                                     |
| 112                                                                                                |                                                                                   | -        | -                                                                                         | -    | -    | -                                                                                         | -    | 4.6  | 4.6                                                                                          | 6.3  | 6.3  | 7.8  | 7.8 | -    | -          | -  | 112 |                                                                                     |
| 120                                                                                                |                                                                                   | -        | -                                                                                         | -    | -    | -                                                                                         | -    | 3.6  | 3.6                                                                                          | 5.0  | 5.0  | 6.3  | 6.3 | -    | -          | -  | 120 |                                                                                     |
| 128                                                                                                |                                                                                   | -        | -                                                                                         | -    | -    | -                                                                                         | -    | 2.8  | 2.8                                                                                          | 4.0  | 4.0  | 5.0  | 5.0 | -    | -          | -  | 128 |                                                                                     |
| 136                                                                                                |                                                                                   | -        | -                                                                                         | -    | -    | -                                                                                         | -    | -    | -                                                                                            | 2.9  | 2.9  | 3.8  | 3.8 | -    | -          | -  | 136 |                                                                                     |
| 144                                                                                                |                                                                                   | -        | -                                                                                         | -    | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | 2.7  | 2.7 | -    | -          | -  | 144 |                                                                                     |

|                                                                                     |                                                                                     |  181.1 ft |     |      |     |      |     |  196.9 ft |    |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----|------|-----|------|-----|------------------------------------------------------------------------------------------------|----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°  | 0,3° | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1° | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |     | 18°  |     | 36°  |     | 0°                                                                                             |    | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |     |      |     |      |     |                                                                                                |    |      |    |      |    | ft                                                                                    |  |
| 64                                                                                  | 11.1                                                                                | 10.6                                                                                         | -   | -    | -   | -    | -   | -                                                                                              | -  | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  | 8.0                                                                                 | 8.0                                                                                          | -   | -    | -   | -    | 6.2 | 6.2                                                                                            | -  | -    | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                  | 5.7                                                                                 | 5.7                                                                                          | -   | -    | -   | -    | 3.9 | 3.9                                                                                            | -  | -    | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                  | 3.9                                                                                 | 3.9                                                                                          | 7.0 | 7.0  | -   | -    | -   | -                                                                                              | -  | -    | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                  | -                                                                                   | -                                                                                            | 5.1 | 5.1  | -   | -    | -   | -                                                                                              | -  | -    | -  | -    | -  | 96                                                                                    |  |
| 104                                                                                 | -                                                                                   | -                                                                                            | 3.5 | 3.5  | 6.0 | -    | -   | -                                                                                              | -  | -    | -  | -    | -  | 104                                                                                   |  |
| 112                                                                                 | -                                                                                   | -                                                                                            | -   | -    | 4.6 | 4.6  | -   | -                                                                                              | -  | -    | -  | -    | -  | 112                                                                                   |  |
| 120                                                                                 | -                                                                                   | -                                                                                            | -   | -    | 3.2 | 3.2  | -   | -                                                                                              | -  | -    | -  | -    | -  | 120                                                                                   |  |



# HAV-HY

|  99,200 lb +  33,100 lb |                                                                                   |  16.4 ft |       |  15.6 ft |      |  32.2 ft/s |      | 360°                                                                                         |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |       |                                                                                           |      |                                                                                             |      |  126.0 ft |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°    | 0,3°                                                                                      | 1°   | 0,3°                                                                                        | 1°   | 0,3°                                                                                         | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |       | 18°                                                                                       |      | 36°                                                                                         |      | 0°                                                                                           |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |       |                                                                                           |      |                                                                                             |      |                                                                                              |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 119.2                                                                                     | 105.7 | 89.2                                                                                      | -    | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 113.1                                                                                     | 101.2 | 85.9                                                                                      | 80.0 | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 107.3                                                                                     | 97.2  | 82.9                                                                                      | 77.5 | -                                                                                           | -    | -                                                                                            | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 102.0                                                                                     | 93.4  | 80.1                                                                                      | 75.4 | 65.7                                                                                        | 61.8 | -                                                                                            | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 97.4                                                                                      | 90.0  | 77.8                                                                                      | 73.4 | 64.4                                                                                        | 60.7 | -                                                                                            | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 93.1                                                                                      | 86.8  | 75.5                                                                                      | 71.4 | 63.1                                                                                        | 59.6 | -                                                                                            | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 85.8                                                                                      | 81.2  | 71.6                                                                                      | 68.0 | 60.2                                                                                        | 57.9 | -                                                                                            | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 79.5                                                                                      | 76.4  | 67.6                                                                                      | 65.3 | 57.2                                                                                        | 56.3 | 74.9                                                                                         | 68.0 | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 74.6                                                                                      | 72.0  | 63.4                                                                                      | 62.4 | 54.9                                                                                        | 54.1 | 67.0                                                                                         | 65.9 | 62.7       | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 69.8                                                                                      | 67.7  | 59.6                                                                                      | 58.7 | 53.1                                                                                        | 52.5 | 60.8                                                                                         | 60.8 | 58.6       | 56.5 | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 64.7                                                                                      | 63.1  | 56.0                                                                                      | 55.2 | -                                                                                           | -    | 55.1                                                                                         | 55.3 | 54.4       | 53.1 | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 46.6                                                                                         | 46.3 | 45.8       | 44.8 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 38.8                                                                                         | 38.7 | 39.1       | 38.4 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 32.9                                                                                         | 32.7 | 32.3       | 32.2 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 27.5                                                                                         | 27.5 | 27.8       | 27.8 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 23.0                                                                                         | 23.0 | 23.6       | 23.6 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 19.5                                                                                         | 19.5 | 19.9       | 19.9 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 17.0                                                                                         | 17.0 | 17.1       | 17.1 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 15.6                                                                                         | 15.6 | 15.4       | 15.4 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 13.8                                                                                         | 13.8 | 14.0       | 14.0 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 12.0                                                                                         | 12.0 | 12.2       | 12.2 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -     | -                                                                                         | -    | -                                                                                           | -    | 10.7                                                                                         | 10.7 | -          | -    | 128                                                                                 |     |

|                                                                                     |                                                                                     |         |  181.1 ft |         |      |         |  196.9 ft |         |      |         |      |         |      |                                                                                       |  |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|---------|------|---------|------------------------------------------------------------------------------------------------|---------|------|---------|------|---------|------|---------------------------------------------------------------------------------------|--|--|
|  |  | 0,3° 1° |                                                                                              | 0,3° 1° |      | 0,3° 1° |                                                                                                | 0,3° 1° |      | 0,3° 1° |      | 0,3° 1° |      |  |  |  |
|                                                                                     |                                                                                     | 0°      |                                                                                              | 18°     |      | 36°     |                                                                                                | 0°      |      | 18°     |      | 36°     |      |                                                                                       |  |  |
| ft                                                                                  |                                                                                     |         |                                                                                              |         |      |         | 1,000 lb                                                                                       |         |      |         |      |         | ft   |                                                                                       |  |  |
| 48                                                                                  |                                                                                     | 35.0    | 28.4                                                                                         | -       | -    | -       | -                                                                                              | -       | -    | -       | -    | -       | -    | 48                                                                                    |  |  |
| 56                                                                                  |                                                                                     | 31.0    | 27.6                                                                                         | 30.2    | 27.3 | 29.5    | -                                                                                              | 24.7    | 22.3 | 24.8    | -    | -       | -    | 56                                                                                    |  |  |
| 64                                                                                  |                                                                                     | 27.2    | 25.1                                                                                         | 26.7    | 24.8 | 26.4    | 24.4                                                                                           | 22.1    | 21.0 | 22.0    | 21.2 | 21.9    | 21.2 | 64                                                                                    |  |  |
| 72                                                                                  |                                                                                     | 23.9    | 22.1                                                                                         | 23.7    | 21.9 | 23.4    | 21.9                                                                                           | 19.5    | 19.0 | 19.2    | 19.2 | 19.2    | 19.2 | 72                                                                                    |  |  |
| 80                                                                                  |                                                                                     | 20.7    | 19.2                                                                                         | 21.0    | 19.2 | 20.8    | 19.3                                                                                           | 17.0    | 16.9 | 17.1    | 17.1 | 17.1    | 17.1 | 80                                                                                    |  |  |
| 88                                                                                  |                                                                                     | 18.1    | 16.9                                                                                         | 18.4    | 17.0 | 18.5    | 17.1                                                                                           | 14.8    | 14.7 | 15.0    | 14.9 | 15.2    | 15.0 | 88                                                                                    |  |  |
| 96                                                                                  |                                                                                     | 15.4    | 14.9                                                                                         | 15.8    | 15.1 | 16.2    | 15.1                                                                                           | 12.9    | 12.8 | 13.1    | 13.1 | 13.2    | 13.1 | 96                                                                                    |  |  |
| 104                                                                                 |                                                                                     | 13.1    | 13.0                                                                                         | 13.5    | 13.2 | 13.7    | 13.4                                                                                           | 11.2    | 11.2 | 11.4    | 11.4 | 11.6    | 11.4 | 104                                                                                   |  |  |
| 112                                                                                 |                                                                                     | 11.0    | 10.9                                                                                         | 11.4    | 11.4 | 11.6    | 11.6                                                                                           | 9.8     | 9.8  | 10.1    | 9.9  | 10.1    | 10.1 | 112                                                                                   |  |  |
| 120                                                                                 |                                                                                     | 9.8     | 9.0                                                                                          | 9.5     | 9.5  | 9.7     | 9.7                                                                                            | 8.5     | 8.5  | 8.8     | 8.7  | 8.8     | 8.8  | 120                                                                                   |  |  |
| 128                                                                                 |                                                                                     | 8.1     | 7.9                                                                                          | 8.2     | 8.2  | 8.3     | 8.3                                                                                            | 7.2     | 7.2  | 7.5     | 7.4  | 7.7     | 7.7  | 128                                                                                   |  |  |
| 136                                                                                 |                                                                                     | 6.7     | 6.7                                                                                          | 7.1     | 7.1  | 7.1     | 7.1                                                                                            | 5.8     | 5.8  | 6.0     | 6.0  | 6.3     | 6.3  | 136                                                                                   |  |  |
| 144                                                                                 |                                                                                     | 5.6     | 5.6                                                                                          | 5.8     | 5.8  | 6.0     | 6.0                                                                                            | 4.5     | 4.5  | 4.7     | 4.7  | 4.9     | 4.9  | 144                                                                                   |  |  |
| 152                                                                                 |                                                                                     | 4.5     | 4.5                                                                                          | 4.7     | 4.7  | 4.7     | 4.7                                                                                            | 3.4     | 3.4  | 3.6     | 3.6  | 3.8     | 3.8  | 152                                                                                   |  |  |
| 160                                                                                 |                                                                                     | 3.5     | 3.5                                                                                          | 3.6     | 3.6  | -       | -                                                                                              | -       | -    | -       | -    | 2.7     | 2.7  | 160                                                                                   |  |  |



# HAV-HY

|  99,200 lb +  33,100 lb |  |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                         |  |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |     |
|                                                                                                                                                                                           |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |                                                                                     |     |
|                                                                                                                                                                                           |  | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |  | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |  | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 10  |
| 12                                                                                                                                                                                        |  | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 12  |
| 14                                                                                                                                                                                        |  | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 14  |
| 16                                                                                                                                                                                        |  | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 16  |
| 18                                                                                                                                                                                        |  | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 18  |
| 20                                                                                                                                                                                        |  | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 20  |
| 24                                                                                                                                                                                        |  | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 24  |
| 28                                                                                                                                                                                        |  | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 28  |
| 32                                                                                                                                                                                        |  | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1 | 39.7 | -          | -    | -                                                                                   | 32  |
| 36                                                                                                                                                                                        |  | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 44.7 | 38.6 | -          | -    | -                                                                                   | 36  |
| 40                                                                                                                                                                                        |  | 39.1                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 43.2 | 37.6 | 35.3       | -    | -                                                                                   | 40  |
| 48                                                                                                                                                                                        |  | 34.5                                                                                      | 32.3 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 40.4 | 35.7 | 33.4       | 28.8 | -                                                                                   | 48  |
| 56                                                                                                                                                                                        |  | 31.0                                                                                      | 29.5 | 26.5                                                                                      | 26.2 | 21.7                                                                                         | 21.7 | 36.6 | 33.9 | 31.4       | 27.5 | 24.8                                                                                | 56  |
| 64                                                                                                                                                                                        |  | 27.6                                                                                      | 26.9 | 24.2                                                                                      | 24.2 | -                                                                                            | -    | 32.2 | 31.8 | 29.3       | 26.5 | 23.6                                                                                | 64  |
| 72                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 27.0 | 27.0 | 27.2       | 25.4 | 22.5                                                                                | 72  |
| 80                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 23.0 | 23.0 | 23.9       | 23.0 | 21.4                                                                                | 80  |
| 88                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 20.0 | 20.0 | 20.5       | 20.2 | 20.2                                                                                | 88  |
| 96                                                                                                                                                                                        |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.6 | 17.6 | 17.4       | 17.3 | 17.9                                                                                | 96  |
| 104                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.1 | 15.1 | 14.9       | 14.9 | 15.5                                                                                | 104 |
| 112                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.1 | 13.1 | 13.8       | 13.8 | 13.4                                                                                | 112 |
| 120                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.4 | 11.4 | 12.0       | 12.0 | 12.3                                                                                | 120 |
| 128                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.5 | 10.5 | 10.4       | 10.4 | 9.6                                                                                 | 128 |
| 136                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.7  | 9.7  | 9.4        | 9.0  | -                                                                                   | 136 |
| 144                                                                                                                                                                                       |  | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.6  | 8.6  | 8.4        | 8.4  | -                                                                                   | 144 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |          |  196.9 ft |      |      |      |      |      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|----------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°       | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |          | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      |      | 1,000 lb |                                                                                                |      |      |      |      | ft   |                                                                                       |
| 56                                                                                  |                                                                                     | 25.0                                                                                         | 21.4 | -    | -    | -    | -        | 20.5                                                                                           | 16.8 | -    | -    | -    | -    | 56                                                                                    |
| 64                                                                                  |                                                                                     | 23.1                                                                                         | 21.4 | -    | -    | -    | -        | 19.6                                                                                           | 16.8 | -    | -    | -    | -    | 64                                                                                    |
| 72                                                                                  |                                                                                     | 20.8                                                                                         | 20.1 | 19.7 | 19.7 | -    | -        | 18.1                                                                                           | 16.8 | 17.7 | -    | -    | -    | 72                                                                                    |
| 80                                                                                  |                                                                                     | 18.4                                                                                         | 18.4 | 18.0 | 17.8 | 17.2 | 17.2     | 16.2                                                                                           | 15.5 | 16.1 | 15.7 | 15.4 | 15.4 | 80                                                                                    |
| 88                                                                                  |                                                                                     | 16.3                                                                                         | 16.3 | 16.2 | 16.2 | 15.9 | 15.9     | 14.4                                                                                           | 14.2 | 14.4 | 14.3 | 14.2 | 14.1 | 88                                                                                    |
| 96                                                                                  |                                                                                     | 14.5                                                                                         | 14.5 | 14.7 | 14.6 | 14.7 | 14.5     | 12.6                                                                                           | 12.6 | 12.8 | 12.8 | 13.0 | 12.8 | 96                                                                                    |
| 104                                                                                 |                                                                                     | 12.8                                                                                         | 12.8 | 13.2 | 13.2 | 13.4 | 13.4     | 11.0                                                                                           | 11.0 | 11.4 | 11.4 | 11.6 | 11.6 | 104                                                                                   |
| 112                                                                                 |                                                                                     | 11.4                                                                                         | 11.4 | 11.8 | 11.6 | 12.0 | 12.0     | 9.6                                                                                            | 9.6  | 10.1 | 10.1 | 10.3 | 10.3 | 112                                                                                   |
| 120                                                                                 |                                                                                     | 9.8                                                                                          | 9.8  | 10.5 | 10.3 | 10.7 | 10.7     | 8.3                                                                                            | 8.3  | 8.8  | 8.8  | 9.0  | 9.0  | 120                                                                                   |
| 128                                                                                 |                                                                                     | 8.1                                                                                          | 8.1  | 9.0  | 9.0  | 9.4  | 9.4      | 7.3                                                                                            | 7.3  | 7.7  | 7.7  | 7.9  | 7.9  | 128                                                                                   |
| 136                                                                                 |                                                                                     | 6.8                                                                                          | 6.8  | 7.4  | 7.4  | 8.0  | 8.0      | 6.2                                                                                            | 6.2  | 6.6  | 6.6  | 6.9  | 6.9  | 136                                                                                   |
| 144                                                                                 |                                                                                     | 6.0                                                                                          | 6.0  | 6.2  | 6.2  | 6.5  | 6.5      | 5.1                                                                                            | 5.1  | 5.8  | 5.8  | 6.0  | 6.0  | 144                                                                                   |
| 152                                                                                 |                                                                                     | 4.9                                                                                          | 4.9  | 5.4  | 5.4  | 5.6  | 5.6      | 4.0                                                                                            | 4.0  | 4.7  | 4.7  | 5.1  | 5.1  | 152                                                                                   |
| 160                                                                                 |                                                                                     | 3.9                                                                                          | 3.9  | 4.5  | 4.5  | 4.7  | 4.7      | 3.0                                                                                            | 3.0  | 3.6  | 3.6  | 4.1  | 4.1  | 160                                                                                   |
| 168                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5  | 3.7  | 3.7      | -                                                                                              | -    | -    | -    | -    | -    | 168                                                                                   |
| 176                                                                                 |                                                                                     | -                                                                                            | -    | 2.6  | 2.6  | 2.8  | 2.8      | -                                                                                              | -    | -    | -    | -    | -    | 176                                                                                   |



# HAV-HY

|  99,200 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 44.5                                                                                      | 37.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 43.0                                                                                      | 36.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 41.6                                                                                      | 35.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 40.1                                                                                      | 34.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 37.4                                                                                      | 32.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 34.9                                                                                      | 30.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 32.6                                                                                      | 28.5 | 25.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 30.6                                                                                      | 27.0 | 24.1                                                                                      | 21.8 | -                                                                                            | -    | 30.0 | 24.8 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 28.6                                                                                      | 25.6 | 22.8                                                                                      | 20.8 | -                                                                                            | -    | 29.2 | 24.1 | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 25.5                                                                                      | 23.3 | 20.7                                                                                      | 19.0 | 16.3                                                                                         | 15.8 | 27.6 | 22.9 | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 23.0                                                                                      | 21.2 | 18.9                                                                                      | 17.5 | 14.6                                                                                         | 14.6 | 26.0 | 21.8 | 20.6       | 18.4 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 20.7                                                                                      | 19.3 | 17.3                                                                                      | 16.3 | 13.4                                                                                         | 13.4 | 24.5 | 20.7 | 19.4       | 17.6 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | 18.6                                                                                      | 17.9 | 15.7                                                                                      | 15.2 | 12.6                                                                                         | 12.6 | 23.2 | 19.6 | 18.5       | 16.8 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | 16.7                                                                                      | 16.7 | 14.4                                                                                      | 14.4 | -                                                                                            | -    | 21.9 | 18.8 | 17.7       | 16.0 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 20.1 | 17.9 | 16.9       | 15.5 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 17.1 | 16.7 | 16.1       | 14.9 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.0 | 15.0 | 15.3       | 14.4 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.9 | 12.9 | 13.8       | 13.8 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.5 | 11.5 | 12.2       | 12.2 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.6 | 10.6 | 10.6       | 10.6 | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.3  | 9.3  | 9.4        | 9.4  | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.0  | 8.0  | 8.6        | 8.6  | 144                                                                                 |     |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.9  | 6.9  | 7.5        | 7.5  | 152                                                                                 |     |
| 160                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.4  | 6.4  | 6.3        | 6.3  | 160                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 18.6                                                                                         | 15.7 | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 18.2                                                                                         | 15.7 | -    | -    | -        | -    | 15.7                                                                                           | 12.3 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 17.6                                                                                         | 15.7 | -    | -    | -        | -    | 15.2                                                                                           | 12.3 | -    | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 16.8                                                                                         | 15.4 | 15.5 | 14.0 | -        | -    | 14.6                                                                                           | 12.3 | 14.2 | -    | -    | -    | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 15.4                                                                                         | 14.9 | 14.4 | 13.5 | 12.6     | 12.0 | 13.7                                                                                           | 12.3 | 13.1 | 12.3 | -    | -    | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 14.1                                                                                         | 13.9 | 13.3 | 12.9 | 12.1     | 11.8 | 12.2                                                                                           | 11.9 | 12.0 | 11.7 | 11.2 | 11.1 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 12.5                                                                                         | 12.5 | 12.4 | 12.2 | 11.5     | 11.3 | 10.7                                                                                           | 10.7 | 10.9 | 10.9 | 10.5 | 10.5 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 11.2                                                                                         | 11.2 | 11.4 | 11.4 | 11.0     | 11.0 | 9.6                                                                                            | 9.4  | 9.9  | 9.9  | 9.9  | 9.9  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 10.0                                                                                         | 10.0 | 10.3 | 10.3 | 10.2     | 10.2 | 8.3                                                                                            | 8.3  | 8.8  | 8.8  | 9.1  | 9.1  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 8.7                                                                                          | 8.7  | 9.3  | 9.3  | 9.4      | 9.4  | 7.3                                                                                            | 7.3  | 7.8  | 7.8  | 8.2  | 8.2  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 7.4                                                                                          | 7.4  | 8.3  | 8.2  | 8.6      | 8.6  | 6.4                                                                                            | 6.2  | 6.9  | 6.9  | 7.2  | 7.2  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 6.0                                                                                          | 6.0  | 7.3  | 7.3  | 7.5      | 7.5  | 5.3                                                                                            | 5.3  | 6.0  | 6.0  | 6.4  | 6.2  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 5.0                                                                                          | 5.0  | 6.0  | 6.0  | 6.7      | 6.7  | 4.7                                                                                            | 4.5  | 5.2  | 5.2  | 5.4  | 5.4  | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | 4.5                                                                                          | 4.5  | 5.0  | 5.0  | 5.5      | 5.5  | 3.6                                                                                            | 3.6  | 4.4  | 4.4  | 4.7  | 4.6  | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | 3.7                                                                                          | 3.7  | 4.1  | 4.1  | 4.4      | 4.4  | -                                                                                              | -    | 3.6  | 3.6  | 4.0  | 3.9  | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | 2.8                                                                                          | 2.8  | 3.6  | 3.6  | 3.6      | 3.6  | -                                                                                              | -    | 2.8  | 2.8  | 3.2  | 3.2  | 176                                                                                   |  |
| 184                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.0      | 3.0  | -                                                                                              | -    | -    | -    | -    | -    | 184                                                                                   |  |



# HAV-HY

|  99,200 lb +  33,100 lb |      |  75.5 ft |         |  15.6 ft |         |  32.2 ft/s  |         | 360°    |         | ASME B30.5 |         |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------|---------|-------------------------------------------------------------------------------------|--|
|                         |      |  42.3 ft |         |                                                                                           |         |  126.0 ft |         |         |         |            |         |  |  |
| 0,3° 1°                                                                                                                                                                                   |      | 0,3° 1°                                                                                   | 0,3° 1° | 0,3° 1°                                                                                   | 0,3° 1° | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1°    | 0,3° 1° |                                                                                     |  |
| 0°                                                                                                                                                                                        |      | 18°                                                                                       |         | 36°                                                                                       |         | 0°                                                                                           |         | 18°     |         | 36°        |         |                                                                                     |  |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |         |                                                                                           |         |                                                                                              |         |         |         | ft         |         |                                                                                     |  |
| 18                                                                                                                                                                                        | 27.7 | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | -          | 18      |                                                                                     |  |
| 20                                                                                                                                                                                        | 27.0 | 23.3                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | -          | 20      |                                                                                     |  |
| 24                                                                                                                                                                                        | 25.9 | 22.2                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | -          | 24      |                                                                                     |  |
| 28                                                                                                                                                                                        | 24.5 | 21.1                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | -          | 28      |                                                                                     |  |
| 32                                                                                                                                                                                        | 23.4 | 20.2                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | -          | 32      |                                                                                     |  |
| 36                                                                                                                                                                                        | 22.2 | 19.3                                                                                      | -       | -                                                                                         | -       | -                                                                                            | -       | -       | -       | -          | 36      |                                                                                     |  |
| 40                                                                                                                                                                                        | 21.0 | 18.4                                                                                      | 17.9    | -                                                                                         | -       | -                                                                                            | 19.5    | 17.1    | -       | -          | 40      |                                                                                     |  |
| 48                                                                                                                                                                                        | 18.9 | 16.8                                                                                      | 16.2    | 14.6                                                                                      | -       | -                                                                                            | 18.5    | 16.3    | -       | -          | 48      |                                                                                     |  |
| 56                                                                                                                                                                                        | 17.2 | 15.3                                                                                      | 14.8    | 13.4                                                                                      | -       | -                                                                                            | 17.7    | 15.5    | -       | -          | 56      |                                                                                     |  |
| 64                                                                                                                                                                                        | 15.5 | 14.1                                                                                      | 13.7    | 12.3                                                                                      | 10.4    | 10.3                                                                                         | 16.9    | 14.9    | 14.3    | -          | 64      |                                                                                     |  |
| 72                                                                                                                                                                                        | 14.4 | 13.0                                                                                      | 12.6    | 11.5                                                                                      | 9.5     | 9.5                                                                                          | 16.1    | 14.1    | 13.5    | 12.1       | 72      |                                                                                     |  |
| 80                                                                                                                                                                                        | 13.1 | 12.2                                                                                      | 11.3    | 10.9                                                                                      | 8.7     | 8.7                                                                                          | 15.3    | 13.5    | 12.9    | 11.6       | 80      |                                                                                     |  |
| 88                                                                                                                                                                                        | 12.2 | 11.4                                                                                      | 10.4    | 10.2                                                                                      | 8.2     | 8.2                                                                                          | 14.5    | 12.8    | 12.2    | 11.1       | 88      |                                                                                     |  |
| 96                                                                                                                                                                                        | 11.1 | 10.6                                                                                      | 9.5     | 9.5                                                                                       | 7.8     | 7.8                                                                                          | 13.8    | 12.3    | 11.6    | 10.7       | 96      |                                                                                     |  |
| 104                                                                                                                                                                                       | 10.1 | 10.0                                                                                      | 8.9     | 8.9                                                                                       | -       | -                                                                                            | 13.1    | 11.8    | 11.1    | 10.2       | 104     |                                                                                     |  |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 12.5    | 11.4    | 10.8    | 9.9        | 112     |                                                                                     |  |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 11.6    | 10.9    | 10.3    | 9.6        | 120     |                                                                                     |  |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 10.1    | 10.0    | 10.0    | 9.1        | 128     |                                                                                     |  |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 8.7     | 8.7     | 9.6     | 8.9        | 136     |                                                                                     |  |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 7.7     | 7.7     | 8.6     | 8.6        | 144     |                                                                                     |  |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 7.1     | 7.1     | 7.3     | 7.3        | 152     |                                                                                     |  |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 6.1     | 6.1     | 6.4     | 6.4        | 160     |                                                                                     |  |
| 168                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 5.3     | 5.3     | 5.8     | 5.8        | 168     |                                                                                     |  |
| 176                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 4.7     | 4.7     | 5.0     | 5.0        | 176     |                                                                                     |  |
| 184                                                                                                                                                                                       | -    | -                                                                                         | -       | -                                                                                         | -       | -                                                                                            | 4.4     | 4.4     | -       | -          | 184     |                                                                                     |  |

|   |           |  181.1 ft |         |         |          |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|---------|----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1°  | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°     | 0°      | 18°      | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |         |         |          |                                                                                                |         |         |         | ft                                                                                    |     |
| 64                                                                                                                                                                      | 12.8 11.0 | - -                                                                                          | - -     | - -     | - -      | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 12.4 11.0 | - -                                                                                          | - -     | - -     | 11.2 8.8 | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 12.1 11.0 | - -                                                                                          | - -     | - -     | 11.0 8.8 | - -                                                                                            | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 11.8 10.7 | 10.5 9.6                                                                                     | - -     | - -     | 10.7 8.8 | - -                                                                                            | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 11.5 10.4 | 10.2 9.3                                                                                     | - -     | - -     | 10.4 8.8 | 9.6 8.7                                                                                        | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 11.3 10.2 | 10.0 9.1                                                                                     | 8.6 -   | - -     | 9.8 8.8  | 9.3 8.4                                                                                        | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | 10.3 9.7  | 9.7 8.8                                                                                      | 8.4 7.7 | - -     | 9.0 8.8  | 8.8 8.3                                                                                        | 7.9 7.3 | - -     | - -     | 112                                                                                   | 112 |
| 120                                                                                                                                                                     | 9.5 9.4   | 9.3 8.5                                                                                      | 8.1 7.4 | - -     | 8.0 7.9  | 8.2 7.9                                                                                        | 7.6 7.2 | - -     | - -     | 120                                                                                   | 120 |
| 128                                                                                                                                                                     | 8.6 8.6   | 8.6 8.3                                                                                      | 7.8 7.3 | - -     | 7.0 6.9  | 7.4 7.4                                                                                        | 7.2 6.9 | - -     | - -     | 128                                                                                   | 128 |
| 136                                                                                                                                                                     | 7.4 7.4   | 7.9 7.8                                                                                      | 7.6 7.1 | - -     | 6.1 6.1  | 6.7 6.6                                                                                        | 6.7 6.7 | - -     | - -     | 136                                                                                   | 136 |
| 144                                                                                                                                                                     | 6.2 6.2   | 7.3 7.1                                                                                      | 7.1 7.1 | - -     | 5.3 5.1  | 6.0 6.0                                                                                        | 6.2 6.2 | - -     | - -     | 144                                                                                   | 144 |
| 152                                                                                                                                                                     | 5.1 5.1   | 6.5 6.5                                                                                      | 6.7 6.5 | - -     | 4.5 4.3  | 5.2 5.2                                                                                        | 5.6 5.4 | - -     | - -     | 152                                                                                   | 152 |
| 160                                                                                                                                                                     | 4.1 4.1   | 5.4 5.4                                                                                      | 5.9 5.9 | - -     | 3.5 3.5  | 4.4 4.4                                                                                        | 4.9 4.8 | - -     | - -     | 160                                                                                   | 160 |
| 168                                                                                                                                                                     | 3.5 3.5   | 4.4 4.4                                                                                      | 5.1 5.1 | - -     | - -      | 3.7 3.7                                                                                        | 4.2 4.1 | - -     | - -     | 168                                                                                   | 168 |
| 176                                                                                                                                                                     | 2.9 2.9   | 3.4 3.4                                                                                      | 4.3 4.3 | - -     | - -      | 3.2 3.2                                                                                        | 3.4 3.4 | - -     | - -     | 176                                                                                   | 176 |
| 184                                                                                                                                                                     | - -       | 2.8 2.8                                                                                      | 3.4 3.4 | - -     | - -      | - -                                                                                            | 2.8 2.8 | - -     | - -     | 184                                                                                   | 184 |



# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |       |  16.4 ft |          |      |  15.6 ft |      |      |  32.2 ft/s  |      |      | 360° |      | ASME B30.5                                                                          |  |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|----------|------|-------------------------------------------------------------------------------------------|------|------|----------------------------------------------------------------------------------------------|------|------|------|------|-------------------------------------------------------------------------------------|--|----|
|                                                                                                                                                                                           |                                                                                   |       |  42.3 ft |          |      |                                                                                           |      |      |  126.0 ft |      |      |      |      |                                                                                     |  |    |
|                                                                                                          |  | 0,3°  | 1°                                                                                        | 0,3°     | 1°   | 0,3°                                                                                      | 1°   | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°   |  |  |    |
|                                                                                                                                                                                           |                                                                                   | 0°    |                                                                                           | 18°      |      | 36°                                                                                       |      | 0°   |                                                                                              | 18°  |      | 36°  |      |                                                                                     |  |    |
|                                                                                                                                                                                           |                                                                                   | ft    |                                                                                           | 1,000 lb |      |                                                                                           |      |      |                                                                                              |      |      |      |      |                                                                                     |  | ft |
| 10                                                                                                                                                                                        |                                                                                   | 119.2 | 105.7                                                                                     | 89.2     | -    | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 10                                                                                  |  |    |
| 12                                                                                                                                                                                        |                                                                                   | 113.1 | 101.2                                                                                     | 85.9     | 80.0 | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 12                                                                                  |  |    |
| 14                                                                                                                                                                                        |                                                                                   | 107.3 | 97.2                                                                                      | 82.9     | 77.5 | -                                                                                         | -    | -    | -                                                                                            | -    | -    | -    | -    | 14                                                                                  |  |    |
| 16                                                                                                                                                                                        |                                                                                   | 102.0 | 93.4                                                                                      | 80.1     | 75.4 | 65.7                                                                                      | 61.8 | -    | -                                                                                            | -    | -    | -    | -    | 16                                                                                  |  |    |
| 18                                                                                                                                                                                        |                                                                                   | 97.4  | 90.0                                                                                      | 77.8     | 73.4 | 64.4                                                                                      | 60.7 | -    | -                                                                                            | -    | -    | -    | -    | 18                                                                                  |  |    |
| 20                                                                                                                                                                                        |                                                                                   | 93.1  | 86.8                                                                                      | 75.5     | 71.4 | 63.1                                                                                      | 59.6 | -    | -                                                                                            | -    | -    | -    | -    | 20                                                                                  |  |    |
| 24                                                                                                                                                                                        |                                                                                   | 85.8  | 81.2                                                                                      | 71.6     | 68.0 | 60.2                                                                                      | 57.9 | -    | -                                                                                            | -    | -    | -    | -    | 24                                                                                  |  |    |
| 28                                                                                                                                                                                        |                                                                                   | 79.5  | 76.4                                                                                      | 67.6     | 65.3 | 57.2                                                                                      | 56.3 | 74.9 | 68.0                                                                                         | -    | -    | -    | -    | 28                                                                                  |  |    |
| 32                                                                                                                                                                                        |                                                                                   | 74.6  | 72.0                                                                                      | 63.4     | 62.4 | 54.9                                                                                      | 54.1 | 67.0 | 65.9                                                                                         | 62.7 | -    | -    | -    | 32                                                                                  |  |    |
| 36                                                                                                                                                                                        |                                                                                   | 67.0  | 65.7                                                                                      | 59.6     | 58.7 | 53.1                                                                                      | 52.5 | 60.8 | 59.5                                                                                         | 58.6 | 56.5 | 51.0 | -    | 36                                                                                  |  |    |
| 40                                                                                                                                                                                        |                                                                                   | 58.8  | 58.8                                                                                      | 55.7     | 54.9 | -                                                                                         | -    | 54.7 | 52.5                                                                                         | 54.3 | 53.1 | 49.0 | 48.8 | 40                                                                                  |  |    |
| 48                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 42.7 | 42.4                                                                                         | 43.5 | 43.4 | 43.2 | 43.0 | 48                                                                                  |  |    |
| 56                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 34.6 | 34.6                                                                                         | 34.4 | 34.4 | 34.7 | 34.7 | 56                                                                                  |  |    |
| 64                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 27.9 | 27.9                                                                                         | 28.6 | 28.6 | 28.5 | 28.4 | 64                                                                                  |  |    |
| 72                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 23.0 | 23.0                                                                                         | 23.3 | 23.3 | 23.9 | 23.9 | 72                                                                                  |  |    |
| 80                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 20.4 | 20.4                                                                                         | 20.1 | 20.0 | 20.1 | 20.1 | 80                                                                                  |  |    |
| 88                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 17.2 | 17.2                                                                                         | 17.6 | 17.6 | 17.8 | 17.8 | 88                                                                                  |  |    |
| 96                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 14.6 | 14.6                                                                                         | 15.1 | 15.1 | 15.3 | 15.3 | 96                                                                                  |  |    |
| 104                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 12.6 | 12.6                                                                                         | 12.8 | 12.8 | 13.1 | 13.1 | 104                                                                                 |  |    |
| 112                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 11.0 | 11.0                                                                                         | 11.0 | 11.0 | -    | -    | 112                                                                                 |  |    |
| 120                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 9.8  | 9.8                                                                                          | 9.8  | 9.8  | -    | -    | 120                                                                                 |  |    |
| 128                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -        | -    | -                                                                                         | -    | 8.5  | 8.5                                                                                          | -    | -    | -    | -    | 128                                                                                 |  |    |

|                                                                                        |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  ft |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                        |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                     |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 48                                                                                     |                                                                                     | 35.0                                                                                         | 28.4 | -    | -    | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                     |                                                                                     | 31.0                                                                                         | 27.6 | 30.2 | 27.3 | 29.5 | -    | 24.7                                                                                           | 22.3 | 24.8 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                     |                                                                                     | 26.3                                                                                         | 25.1 | 26.7 | 24.8 | 26.4 | 24.4 | 22.1                                                                                           | 21.0 | 22.0 | 21.2 | 21.9 | 21.2 | 64                                                                                    |  |
| 72                                                                                     |                                                                                     | 21.5                                                                                         | 21.5 | 22.2 | 21.9 | 22.8 | 21.9 | 19.5                                                                                           | 19.0 | 19.2 | 19.2 | 19.2 | 19.2 | 72                                                                                    |  |
| 80                                                                                     |                                                                                     | 17.7                                                                                         | 17.6 | 18.2 | 18.2 | 18.9 | 18.9 | 17.0                                                                                           | 16.8 | 17.1 | 17.1 | 17.1 | 17.1 | 80                                                                                    |  |
| 88                                                                                     |                                                                                     | 15.2                                                                                         | 14.5 | 15.1 | 15.1 | 15.5 | 15.5 | 14.3                                                                                           | 14.3 | 14.8 | 14.8 | 15.1 | 15.0 | 88                                                                                    |  |
| 96                                                                                     |                                                                                     | 12.6                                                                                         | 12.6 | 13.0 | 13.0 | 13.1 | 13.1 | 11.8                                                                                           | 11.8 | 12.4 | 12.4 | 12.9 | 12.9 | 96                                                                                    |  |
| 104                                                                                    |                                                                                     | 10.4                                                                                         | 10.4 | 11.1 | 11.1 | 11.3 | 11.3 | 9.5                                                                                            | 9.5  | 10.0 | 10.0 | 10.4 | 10.4 | 104                                                                                   |  |
| 112                                                                                    |                                                                                     | 8.5                                                                                          | 8.5  | 8.9  | 8.9  | 9.4  | 9.4  | 7.4                                                                                            | 7.4  | 8.1  | 8.1  | 8.5  | 8.5  | 112                                                                                   |  |
| 120                                                                                    |                                                                                     | 6.9                                                                                          | 6.9  | 7.3  | 7.3  | 7.6  | 7.6  | 5.8                                                                                            | 5.8  | 6.2  | 6.2  | 6.7  | 6.7  | 120                                                                                   |  |
| 128                                                                                    |                                                                                     | 5.4                                                                                          | 5.4  | 5.8  | 5.8  | 5.9  | 5.9  | 4.3                                                                                            | 4.3  | 4.7  | 4.7  | 5.1  | 5.1  | 128                                                                                   |  |
| 136                                                                                    |                                                                                     | 4.2                                                                                          | 4.2  | 4.5  | 4.5  | 4.7  | 4.7  | 3.1                                                                                            | 3.1  | 3.4  | 3.4  | 3.6  | 3.6  | 136                                                                                   |  |
| 144                                                                                    |                                                                                     | 3.1                                                                                          | 3.1  | 3.4  | 3.4  | 3.4  | 3.4  | -                                                                                              | -    | 2.3  | 2.3  | 2.5  | 2.5  | 144                                                                                   |  |



# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1 | 39.7 | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 44.7 | 38.6 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 43.2 | 37.6 | 35.3       | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 34.5                                                                                      | 32.3 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 40.1 | 35.7 | 33.4       | 28.8 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 31.0                                                                                      | 29.5 | 26.5                                                                                      | 26.2 | 21.7                                                                                         | 21.7 | 34.2 | 32.8 | 31.4       | 27.5 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 27.6                                                                                      | 26.9 | 24.2                                                                                      | 24.2 | -                                                                                            | -    | 27.7 | 27.7 | 28.8       | 26.5 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 23.6 | 23.6 | 24.1       | 23.9 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 19.8 | 19.8 | 20.0       | 20.0 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.8 | 16.8 | 17.5       | 16.9 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 14.8 | 14.8 | 15.1       | 15.1 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.2 | 13.2 | 13.2       | 12.8 | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.4 | 11.4 | 11.4       | 11.4 | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.0 | 10.0 | 10.3       | 10.3 | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.7  | 8.7  | 9.0        | 9.0  | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.5  | 7.5  | 7.8        | 7.8  | 136                                                                                 |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.6  | 6.6  | 6.5        | 6.5  | 144                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 25.0                                                                                         | 21.4 | -    | -    | -    | -    | 20.5                                                                                           | 16.8 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 23.1                                                                                         | 21.4 | -    | -    | -    | -    | 19.6                                                                                           | 16.8 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 20.8                                                                                         | 20.1 | 19.7 | 19.7 | -    | -    | 18.1                                                                                           | 16.8 | 17.7 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 18.2                                                                                         | 18.1 | 18.0 | 17.8 | 17.2 | 17.2 | 16.2                                                                                           | 15.5 | 16.1 | 15.7 | 15.4 | 15.4 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 15.2                                                                                         | 15.2 | 16.0 | 16.0 | 15.9 | 15.9 | 14.4                                                                                           | 14.2 | 14.4 | 14.3 | 14.2 | 14.1 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 12.6                                                                                         | 12.6 | 13.7 | 13.7 | 14.4 | 14.4 | 12.2                                                                                           | 12.2 | 12.8 | 12.8 | 13.0 | 12.8 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 10.7                                                                                         | 10.7 | 11.5 | 11.5 | 12.4 | 12.4 | 10.0                                                                                           | 10.0 | 11.2 | 11.2 | 11.6 | 11.6 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 9.2                                                                                          | 9.2  | 9.8  | 9.8  | 10.3 | 10.3 | 8.1                                                                                            | 8.1  | 9.4  | 9.4  | 10.3 | 10.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 7.6                                                                                          | 7.6  | 8.4  | 8.4  | 8.8  | 8.8  | 6.5                                                                                            | 6.5  | 7.6  | 7.6  | 8.4  | 8.4  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 6.1                                                                                          | 6.1  | 6.9  | 6.9  | 7.5  | 7.5  | 5.0                                                                                            | 5.0  | 5.9  | 5.9  | 6.6  | 6.6  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 4.7                                                                                          | 4.7  | 5.6  | 5.6  | 6.0  | 6.0  | 3.8                                                                                            | 3.8  | 4.5  | 4.5  | 5.2  | 5.2  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 3.6                                                                                          | 3.6  | 4.2  | 4.2  | 4.7  | 4.7  | 2.7                                                                                            | 2.7  | 3.4  | 3.4  | 4.0  | 4.0  | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | -                                                                                            | -    | 3.2  | 3.2  | 3.6  | 3.6  | -                                                                                              | -    | -    | -    | -    | -    | 152                                                                                   |  |





# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 44.5                                                                                      | 37.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 43.0                                                                                      | 36.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 41.6                                                                                      | 35.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 40.1                                                                                      | 34.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 37.4                                                                                      | 32.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 34.9                                                                                      | 30.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 32.6                                                                                      | 28.5 | 25.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 30.6                                                                                      | 27.0 | 24.1                                                                                      | 21.8 | -                                                                                            | -    | 30.0 | 24.8 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 28.6                                                                                      | 25.6 | 22.8                                                                                      | 20.8 | -                                                                                            | -    | 29.2 | 24.1 | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 25.5                                                                                      | 23.3 | 20.7                                                                                      | 19.0 | 16.3                                                                                         | 15.8 | 27.6 | 22.9 | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 23.0                                                                                      | 21.2 | 18.9                                                                                      | 17.5 | 14.6                                                                                         | 14.6 | 26.0 | 21.8 | 20.6       | 18.4 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 20.7                                                                                      | 19.3 | 17.3                                                                                      | 16.3 | 13.4                                                                                         | 13.4 | 24.5 | 20.7 | 19.4       | 17.6 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | 18.6                                                                                      | 17.9 | 15.7                                                                                      | 15.2 | 12.6                                                                                         | 12.6 | 23.2 | 19.6 | 18.5       | 16.8 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | 16.7                                                                                      | 16.7 | 14.4                                                                                      | 14.4 | -                                                                                            | -    | 19.8 | 18.7 | 17.7       | 16.0 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.6 | 16.6 | 16.9       | 15.5 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 14.4 | 14.4 | 15.3       | 14.9 | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.8 | 12.8 | 13.3       | 13.3 | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.9 | 10.9 | 11.4       | 11.4 | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.7  | 9.7  | 10.3       | 10.3 | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.7  | 8.7  | 8.9        | 8.9  | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.9  | 7.9  | 8.1        | 8.1  | 136                                                                                 |     |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.9  | 6.9  | 7.3        | 7.3  | 144                                                                                 |     |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.8  | 5.8  | 6.5        | 6.5  | 152                                                                                 |     |
| 160                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.0  | 5.0  | 5.4        | 5.4  | 160                                                                                 |     |

|   |  |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |  |      |  |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|------|--|----|--|
|                                                                                                                                                                         |  | 0,3°                                                                                         |      | 1°   |      | 0,3°     |      | 1°                                                                                             |      | 0,3° |      | 1°   |      |                                                                                       | 0,3° |  | 1° |  |
|                                                                                                                                                                         |  | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |      |  |    |  |
| ft                                                                                                                                                                      |  |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      |      |      | ft                                                                                    |      |  |    |  |
| 56                                                                                                                                                                      |  | 18.6                                                                                         | 15.7 | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | -                                                                                     | 56   |  |    |  |
| 64                                                                                                                                                                      |  | 18.2                                                                                         | 15.7 | -    | -    | -        | -    | 15.7                                                                                           | 12.3 | -    | -    | -    | -    | -                                                                                     | 64   |  |    |  |
| 72                                                                                                                                                                      |  | 17.6                                                                                         | 15.7 | -    | -    | -        | -    | 15.2                                                                                           | 12.3 | -    | -    | -    | -    | -                                                                                     | 72   |  |    |  |
| 80                                                                                                                                                                      |  | 16.8                                                                                         | 15.4 | 15.5 | 14.0 | -        | -    | 14.6                                                                                           | 12.3 | 14.2 | -    | -    | -    | -                                                                                     | 80   |  |    |  |
| 88                                                                                                                                                                      |  | 15.2                                                                                         | 14.8 | 14.4 | 13.5 | 12.6     | 12.0 | 13.7                                                                                           | 12.3 | 13.1 | 12.3 | -    | -    | -                                                                                     | 88   |  |    |  |
| 96                                                                                                                                                                      |  | 13.1                                                                                         | 13.0 | 13.3 | 12.9 | 12.1     | 11.8 | 12.0                                                                                           | 11.8 | 12.0 | 11.7 | 11.2 | 11.1 | -                                                                                     | 96   |  |    |  |
| 104                                                                                                                                                                     |  | 10.8                                                                                         | 10.8 | 12.4 | 12.2 | 11.5     | 11.3 | 10.0                                                                                           | 10.0 | 10.9 | 10.9 | 10.5 | 10.5 | -                                                                                     | 104  |  |    |  |
| 112                                                                                                                                                                     |  | 9.2                                                                                          | 9.2  | 10.7 | 10.7 | 11.0     | 11.0 | 8.3                                                                                            | 8.3  | 9.8  | 9.8  | 9.9  | 9.9  | -                                                                                     | 112  |  |    |  |
| 120                                                                                                                                                                     |  | 8.1                                                                                          | 8.1  | 9.1  | 9.1  | 10.0     | 10.0 | 6.7                                                                                            | 6.7  | 8.4  | 8.4  | 9.1  | 9.1  | -                                                                                     | 120  |  |    |  |
| 128                                                                                                                                                                     |  | 6.7                                                                                          | 6.7  | 7.6  | 7.6  | 8.6      | 8.6  | 5.4                                                                                            | 5.4  | 6.9  | 6.9  | 8.2  | 8.2  | -                                                                                     | 128  |  |    |  |
| 136                                                                                                                                                                     |  | 5.5                                                                                          | 5.5  | 6.6  | 6.6  | 7.0      | 7.0  | 4.2                                                                                            | 4.2  | 5.6  | 5.6  | 6.9  | 6.9  | -                                                                                     | 136  |  |    |  |
| 144                                                                                                                                                                     |  | 4.2                                                                                          | 4.2  | 5.4  | 5.4  | 6.2      | 6.2  | 3.1                                                                                            | 3.1  | 4.5  | 4.5  | 5.6  | 5.6  | -                                                                                     | 144  |  |    |  |
| 152                                                                                                                                                                     |  | 3.4                                                                                          | 3.4  | 4.3  | 4.3  | 4.9      | 4.9  | -                                                                                              | -    | 3.4  | 3.4  | 4.3  | 4.3  | -                                                                                     | 152  |  |    |  |
| 160                                                                                                                                                                     |  | -                                                                                            | -    | 3.3  | 3.3  | 3.9      | 3.9  | -                                                                                              | -    | -    | -    | 3.2  | 3.2  | -                                                                                     | 160  |  |    |  |



# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |  75.5 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 18                                                                                                                                                                                        | 27.7                                                                              | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        | 27.0                                                                              | 23.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        | 25.9                                                                              | 22.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        | 24.5                                                                              | 21.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        | 23.4                                                                              | 20.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        | 22.2                                                                              | 19.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        | 21.0                                                                              | 18.4                                                                                      | 17.9 | -                                                                                         | -    | -                                                                                            | 19.5 | 17.1 | -    | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        | 18.9                                                                              | 16.8                                                                                      | 16.2 | 14.6                                                                                      | -    | -                                                                                            | 18.5 | 16.3 | -    | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        | 17.2                                                                              | 15.3                                                                                      | 14.8 | 13.4                                                                                      | -    | -                                                                                            | 17.7 | 15.5 | -    | -          | -    | 56                                                                                  |     |
| 64                                                                                                                                                                                        | 15.5                                                                              | 14.1                                                                                      | 13.7 | 12.3                                                                                      | 10.4 | 10.3                                                                                         | 16.9 | 14.9 | 14.3 | -          | -    | 64                                                                                  |     |
| 72                                                                                                                                                                                        | 14.4                                                                              | 13.0                                                                                      | 12.6 | 11.5                                                                                      | 9.5  | 9.5                                                                                          | 16.1 | 14.1 | 13.5 | 12.1       | -    | 72                                                                                  |     |
| 80                                                                                                                                                                                        | 13.1                                                                              | 12.2                                                                                      | 11.3 | 10.9                                                                                      | 8.7  | 8.7                                                                                          | 15.3 | 13.5 | 12.9 | 11.6       | 10.1 | 9.4                                                                                 |     |
| 88                                                                                                                                                                                        | 12.2                                                                              | 11.4                                                                                      | 10.4 | 10.2                                                                                      | 8.2  | 8.2                                                                                          | 14.5 | 12.8 | 12.2 | 11.1       | 9.7  | 9.2                                                                                 |     |
| 96                                                                                                                                                                                        | 11.1                                                                              | 10.6                                                                                      | 9.5  | 9.5                                                                                       | 7.8  | 7.8                                                                                          | 13.7 | 12.3 | 11.6 | 10.7       | 9.2  | 8.9                                                                                 |     |
| 104                                                                                                                                                                                       | 10.1                                                                              | 10.0                                                                                      | 8.9  | 8.9                                                                                       | -    | -                                                                                            | 12.3 | 11.8 | 11.1 | 10.2       | 8.9  | 8.6                                                                                 |     |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.7 | 10.5 | 10.8 | 9.9        | 8.6  | 8.4                                                                                 |     |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.6  | 9.6  | 10.1 | 9.6        | 8.3  | 8.1                                                                                 |     |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.4  | 8.4  | 8.9  | 8.8        | 8.0  | 7.9                                                                                 |     |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.4  | 7.4  | 8.1  | 8.1        | 7.8  | 7.8                                                                                 |     |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.4  | 6.4  | 6.9  | 6.9        | 7.5  | 7.5                                                                                 |     |
| 152                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.9  | 5.9  | 6.1  | 6.1        | 6.5  | 6.5                                                                                 |     |
| 160                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.2  | 5.2  | 5.4  | 5.4        | 5.6  | 5.6                                                                                 |     |
| 168                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.3  | 4.3  | 4.7  | 4.7        | -    | -                                                                                   |     |
| 176                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.6  | 3.6  | 4.1  | 4.1        | -    | -                                                                                   |     |
| 184                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.1  | 3.1  | -    | -          | -    | -                                                                                   |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |      |     |  196.9 ft |     |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°  |     | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |     |      |     |                                                                                                |     |      |     |      |     | ft                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.8                                                                                         | 11.0 | -    | -   | -    | -   | -                                                                                              | -   | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 12.4                                                                                         | 11.0 | -    | -   | -    | -   | 11.2                                                                                           | 8.8 | -    | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 12.1                                                                                         | 11.0 | -    | -   | -    | -   | 11.0                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 11.8                                                                                         | 10.7 | 10.5 | 9.6 | -    | -   | 10.7                                                                                           | 8.8 | -    | -   | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 11.5                                                                                         | 10.4 | 10.2 | 9.3 | -    | -   | 10.4                                                                                           | 8.8 | 9.6  | 8.7 | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 10.2                                                                                         | 10.0 | 10.0 | 9.1 | 8.6  | -   | 9.2                                                                                            | 8.8 | 9.3  | 8.4 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 8.8                                                                                          | 8.6  | 9.7  | 8.8 | 8.4  | 7.7 | 7.6                                                                                            | 7.6 | 8.8  | 8.3 | 7.9  | 7.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 7.6                                                                                          | 7.6  | 9.1  | 8.5 | 8.1  | 7.4 | 6.1                                                                                            | 6.1 | 8.1  | 7.8 | 7.6  | 7.2 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 6.3                                                                                          | 6.3  | 7.6  | 7.6 | 7.8  | 7.3 | 4.8                                                                                            | 4.8 | 6.9  | 6.9 | 7.2  | 6.9 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 5.1                                                                                          | 5.1  | 6.4  | 6.4 | 7.6  | 7.1 | 3.8                                                                                            | 3.8 | 5.6  | 5.6 | 6.7  | 6.7 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | 4.0                                                                                          | 4.0  | 5.8  | 5.8 | 6.7  | 6.6 | 2.7                                                                                            | 2.7 | 4.5  | 4.5 | 6.2  | 6.2 | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | 3.2                                                                                          | 3.2  | 4.7  | 4.7 | 5.4  | 5.4 | -                                                                                              | -   | 3.4  | 3.4 | 4.9  | 4.9 | 152                                                                                   |  |
| 160                                                                                 |                                                                                     | -                                                                                            | -    | 3.7  | 3.7 | 4.6  | 4.6 | -                                                                                              | -   | -    | -   | 3.9  | 3.9 | 160                                                                                   |  |
| 168                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 3.7  | 3.7 | -                                                                                              | -   | -    | -   | -    | -   | 168                                                                                   |  |
| 176                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 2.8  | 2.8 | -                                                                                              | -   | -    | -   | -    | -   | 176                                                                                   |  |



# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |       |  16.4 ft    |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |      |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-------------------------------------------------------------------------------------|
|  42.3 ft                                                                                                 |                                                                                   |       |  126.0 ft |      |                                                                                           |      |                                                                                             |      |      |      |            |      |      |                                                                                     |
|                                                                                                          |  | 0,3°  | 1°                                                                                           | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                          | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |                                                                                     |
|                                                                                                                                                                                           |                                                                                   | 0°    |                                                                                              | 18°  |                                                                                           | 36°  |                                                                                             | 0°   |      | 18°  |            | 36°  |      |  |
| ft                                                                                                                                                                                        |                                                                                   |       |                                                                                              |      |                                                                                           |      | 1,000 lb                                                                                    |      |      |      |            |      | ft   |                                                                                     |
| 10                                                                                                                                                                                        |                                                                                   | 119.2 | 105.7                                                                                        | 89.2 | -                                                                                         | -    | -                                                                                           | -    | -    | -    | -          | -    | 10   |                                                                                     |
| 12                                                                                                                                                                                        |                                                                                   | 113.1 | 101.2                                                                                        | 85.9 | 80.0                                                                                      | -    | -                                                                                           | -    | -    | -    | -          | -    | 12   |                                                                                     |
| 14                                                                                                                                                                                        |                                                                                   | 107.3 | 97.2                                                                                         | 82.9 | 77.5                                                                                      | -    | -                                                                                           | -    | -    | -    | -          | -    | 14   |                                                                                     |
| 16                                                                                                                                                                                        |                                                                                   | 102.0 | 93.4                                                                                         | 80.1 | 75.4                                                                                      | 65.7 | 61.8                                                                                        | -    | -    | -    | -          | -    | 16   |                                                                                     |
| 18                                                                                                                                                                                        |                                                                                   | 97.4  | 90.0                                                                                         | 77.8 | 73.4                                                                                      | 64.4 | 60.7                                                                                        | -    | -    | -    | -          | -    | 18   |                                                                                     |
| 20                                                                                                                                                                                        |                                                                                   | 93.1  | 86.8                                                                                         | 75.5 | 71.4                                                                                      | 63.1 | 59.6                                                                                        | -    | -    | -    | -          | -    | 20   |                                                                                     |
| 24                                                                                                                                                                                        |                                                                                   | 85.8  | 81.2                                                                                         | 71.6 | 68.0                                                                                      | 60.2 | 57.9                                                                                        | -    | -    | -    | -          | -    | 24   |                                                                                     |
| 28                                                                                                                                                                                        |                                                                                   | 79.5  | 76.4                                                                                         | 67.6 | 65.3                                                                                      | 57.2 | 56.3                                                                                        | 72.0 | 64.2 | -    | -          | -    | 28   |                                                                                     |
| 32                                                                                                                                                                                        |                                                                                   | 69.2  | 68.5                                                                                         | 63.4 | 62.4                                                                                      | 54.9 | 54.1                                                                                        | 61.9 | 56.1 | 62.7 | -          | -    | 32   |                                                                                     |
| 36                                                                                                                                                                                        |                                                                                   | 58.6  | 58.6                                                                                         | 57.0 | 56.6                                                                                      | 53.1 | 52.5                                                                                        | 54.3 | 49.9 | 55.7 | 51.3       | 51.0 | 36   |                                                                                     |
| 40                                                                                                                                                                                        |                                                                                   | 49.2  | 49.2                                                                                         | 50.1 | 50.1                                                                                      | -    | -                                                                                           | 47.9 | 45.1 | 48.5 | 45.1       | 48.4 | 46.8 | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 36.2 | 35.9 | 36.3 | 36.3       | 37.2 | 36.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 28.8 | 28.8 | 29.1 | 29.1       | 29.7 | 29.7 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 23.8 | 23.8 | 24.1 | 24.1       | 24.3 | 24.3 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 19.7 | 19.7 | 19.9 | 19.9       | 20.4 | 20.4 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 16.5 | 16.5 | 17.0 | 17.0       | 17.0 | 17.0 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 13.8 | 13.8 | 14.2 | 14.2       | 14.4 | 14.4 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 11.7 | 11.7 | 11.9 | 11.9       | 12.1 | 12.1 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 9.9  | 9.9  | 10.1 | 10.1       | 10.2 | 10.2 | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 8.3  | 8.3  | 8.5  | 8.5        | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 6.8  | 6.8  | 7.0  | 7.0        | -    | -    | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -     | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 5.7  | 5.7  | -    | -          | -    | -    | 128                                                                                 |

# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |  |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |  |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |  |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |  |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |  |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |  |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |  |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |  |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |  |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |  |
| 32                                                                                                                                                                                        |                                                                                   | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1 | 39.7 | -          | -    | 32                                                                                  |  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 44.7 | 38.6 | -          | -    | 36                                                                                  |  |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 42.9 | 37.5 | 35.3       | -    | 40                                                                                  |  |
| 48                                                                                                                                                                                        |                                                                                   | 34.5                                                                                      | 32.3 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 36.2 | 34.1 | 33.4       | 28.8 | 48                                                                                  |  |
| 56                                                                                                                                                                                        |                                                                                   | 30.6                                                                                      | 29.5 | 26.5                                                                                      | 26.2 | 21.7                                                                                         | 21.7 | 29.1 | 28.9 | 29.7       | 27.5 | 56                                                                                  |  |
| 64                                                                                                                                                                                        |                                                                                   | 25.9                                                                                      | 25.8 | 24.2                                                                                      | 24.2 | -                                                                                            | -    | 23.7 | 23.6 | 24.8       | 24.0 | 64                                                                                  |  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 19.9 | 19.9 | 20.3       | 20.2 | 72                                                                                  |  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.8 | 16.8 | 17.3       | 16.8 | 80                                                                                  |  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 14.4 | 14.4 | 14.5       | 14.5 | 88                                                                                  |  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 12.3 | 12.3 | 12.8       | 12.8 | 96                                                                                  |  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.4 | 10.4 | 10.8       | 10.8 | 104                                                                                 |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.9  | 8.9  | 9.4        | 9.4  | 112                                                                                 |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.4  | 7.4  | 8.1        | 8.1  | 120                                                                                 |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.2  | 6.2  | 6.7        | 6.7  | 128                                                                                 |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.1  | 5.1  | 5.5        | 5.5  | 136                                                                                 |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.2  | 4.2  | 4.5        | 4.5  | 144                                                                                 |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 24.7                                                                                         | 21.4 | -    | -    | -    | -    | 20.5                                                                                           | 16.8 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 21.2                                                                                         | 19.4 | 19.1 | -    | -    | -    | 19.5                                                                                           | 16.8 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 17.9                                                                                         | 17.0 | 19.0 | 17.9 | -    | -    | 16.2                                                                                           | 15.3 | 17.7 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 14.5                                                                                         | 14.2 | 15.5 | 15.4 | 16.7 | 16.3 | 12.8                                                                                           | 12.6 | 14.7 | 14.3 | 15.4 | 15.3 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 11.8                                                                                         | 11.8 | 13.2 | 13.2 | 13.8 | 13.8 | 10.0                                                                                           | 10.0 | 11.8 | 11.8 | 13.3 | 13.1 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 9.5                                                                                          | 9.5  | 10.8 | 10.8 | 11.8 | 11.8 | 7.8                                                                                            | 7.8  | 9.3  | 9.3  | 10.7 | 10.7 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 7.5                                                                                          | 7.5  | 8.6  | 8.6  | 9.7  | 9.7  | 6.0                                                                                            | 6.0  | 7.3  | 7.3  | 8.6  | 8.6  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 5.9                                                                                          | 5.9  | 7.0  | 7.0  | 7.8  | 7.8  | 4.3                                                                                            | 4.3  | 5.6  | 5.6  | 6.7  | 6.7  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 4.5                                                                                          | 4.5  | 5.4  | 5.4  | 6.1  | 6.1  | 3.1                                                                                            | 3.1  | 4.1  | 4.1  | 5.2  | 5.2  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 3.2                                                                                          | 3.2  | 4.1  | 4.1  | 4.6  | 4.6  | -                                                                                              | -    | 2.9  | 2.9  | 3.9  | 3.9  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | -                                                                                            | -    | 2.7  | 2.7  | 3.3  | 3.3  | -                                                                                              | -    | -    | -    | 2.5  | 2.5  | 136                                                                                   |  |



# HAV-HY

|  55,100 lb +  33,100 lb |      |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360°    |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|---------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |         |      |            |      |  |     |
| 0,3° 1°                                                                                                                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                   |      | 0,3° 1°                                                                                      |      | 0,3° 1° |      | 0,3° 1°    |      |                                                                                     |     |
| 0°                                                                                                                                                                                        |      | 18°                                                                                       |      | 36°                                                                                       |      | 0°                                                                                           |      | 18°     |      | 36°        |      |                                                                                     |     |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |         |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        | 44.5 | 37.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -    | -                                                                                   | 14  |
| 16                                                                                                                                                                                        | 43.0 | 36.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -    | -                                                                                   | 16  |
| 18                                                                                                                                                                                        | 41.6 | 35.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -    | -                                                                                   | 18  |
| 20                                                                                                                                                                                        | 40.1 | 34.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -    | -                                                                                   | 20  |
| 24                                                                                                                                                                                        | 37.4 | 32.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -    | -                                                                                   | 24  |
| 28                                                                                                                                                                                        | 34.9 | 30.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -    | -                                                                                   | 28  |
| 32                                                                                                                                                                                        | 32.6 | 28.5                                                                                      | 25.5 | -                                                                                         | -    | -                                                                                            | -    | -       | -    | -          | -    | -                                                                                   | 32  |
| 36                                                                                                                                                                                        | 30.6 | 27.0                                                                                      | 24.1 | 21.8                                                                                      | -    | -                                                                                            | 30.0 | 24.8    | -    | -          | -    | -                                                                                   | 36  |
| 40                                                                                                                                                                                        | 28.6 | 25.6                                                                                      | 22.8 | 20.8                                                                                      | -    | -                                                                                            | 29.2 | 24.1    | -    | -          | -    | -                                                                                   | 40  |
| 48                                                                                                                                                                                        | 25.5 | 23.3                                                                                      | 20.7 | 19.0                                                                                      | 16.3 | 15.8                                                                                         | 27.6 | 22.9    | -    | -          | -    | -                                                                                   | 48  |
| 56                                                                                                                                                                                        | 23.0 | 21.2                                                                                      | 18.9 | 17.5                                                                                      | 14.6 | 14.6                                                                                         | 26.0 | 21.8    | 20.6 | 18.4       | -    | -                                                                                   | 56  |
| 64                                                                                                                                                                                        | 20.7 | 19.3                                                                                      | 17.3 | 16.3                                                                                      | 13.4 | 13.4                                                                                         | 22.8 | 20.7    | 19.4 | 17.6       | -    | -                                                                                   | 64  |
| 72                                                                                                                                                                                        | 18.6 | 17.9                                                                                      | 15.7 | 15.2                                                                                      | 12.6 | 12.6                                                                                         | 19.7 | 19.4    | 18.5 | 16.8       | 15.0 | 13.9                                                                                | 72  |
| 80                                                                                                                                                                                        | 16.7 | 16.7                                                                                      | 14.4 | 14.4                                                                                      | -    | -                                                                                            | 16.3 | 16.3    | 17.4 | 16.0       | 14.4 | 13.4                                                                                | 80  |
| 88                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.2 | 14.3    | 15.2 | 14.9       | 13.7 | 13.0                                                                                | 88  |
| 96                                                                                                                                                                                        | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 12.3 | 12.3    | 12.8 | 12.9       | 13.2 | 12.6                                                                                | 96  |
| 104                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.8 | 10.8    | 11.2 | 11.3       | 11.7 | 11.6                                                                                | 104 |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.2  | 9.2     | 9.9  | 9.9        | 10.5 | 10.5                                                                                | 112 |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.1  | 8.1     | 8.7  | 8.7        | 8.9  | 8.9                                                                                 | 120 |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.8  | 6.8     | 7.4  | 7.4        | 7.8  | 7.8                                                                                 | 128 |
| 136                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.8  | 5.8     | 6.4  | 6.4        | 6.8  | 6.8                                                                                 | 136 |
| 144                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.7  | 4.7     | 5.3  | 5.3        | 5.8  | 5.8                                                                                 | 144 |
| 152                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.9  | 3.9     | 4.3  | 4.3        | -    | -                                                                                   | 152 |
| 160                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.1  | 3.1     | 3.5  | 3.5        | -    | -                                                                                   | 160 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 18.6                                                                                         | 15.7 | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 18.2                                                                                         | 15.7 | -    | -    | -        | -    | 15.7                                                                                           | 12.3 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 16.8                                                                                         | 15.7 | -    | -    | -        | -    | 15.2                                                                                           | 12.3 | -    | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 14.3                                                                                         | 13.8 | 15.4 | 14.0 | -        | -    | 12.6                                                                                           | 12.0 | 14.2 | -    | -    | -    | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 11.8                                                                                         | 11.8 | 13.4 | 13.0 | 12.6     | 12.0 | 10.0                                                                                           | 10.0 | 12.5 | 11.9 | -    | -    | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 9.5                                                                                          | 9.5  | 11.3 | 11.3 | 12.1     | 11.8 | 7.8                                                                                            | 7.8  | 10.1 | 10.1 | 11.2 | 11.1 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 7.5                                                                                          | 7.5  | 9.5  | 9.5  | 10.6     | 10.6 | 6.0                                                                                            | 6.0  | 8.2  | 8.2  | 9.9  | 9.9  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 6.1                                                                                          | 6.1  | 7.6  | 7.6  | 9.4      | 9.4  | 4.6                                                                                            | 4.6  | 6.3  | 6.3  | 8.1  | 8.1  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 4.8                                                                                          | 4.8  | 6.3  | 6.3  | 7.6      | 7.6  | 3.3                                                                                            | 3.3  | 5.0  | 5.0  | 6.5  | 6.5  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 3.5                                                                                          | 3.5  | 5.0  | 5.0  | 6.3      | 6.3  | -                                                                                              | -    | 3.7  | 3.7  | 5.2  | 5.2  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | 2.6                                                                                          | 2.6  | 3.8  | 3.8  | 4.9      | 4.9  | -                                                                                              | -    | 2.7  | 2.7  | 3.8  | 3.8  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | 2.9  | 2.9  | 3.6      | 3.6  | -                                                                                              | -    | -    | -    | 2.7  | 2.7  | 144                                                                                   |  |



# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |  75.5 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 18                                                                                                                                                                                        | 27.7                                                                              | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        | 27.0                                                                              | 23.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        | 25.9                                                                              | 22.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        | 24.5                                                                              | 21.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        | 23.4                                                                              | 20.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        | 22.2                                                                              | 19.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        | 21.0                                                                              | 18.4                                                                                      | 17.9 | -                                                                                         | -    | -                                                                                            | 19.5 | 17.1 | -    | -          | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        | 18.9                                                                              | 16.8                                                                                      | 16.2 | 14.6                                                                                      | -    | -                                                                                            | 18.5 | 16.3 | -    | -          | -    | 48                                                                                  |     |
| 56                                                                                                                                                                                        | 17.2                                                                              | 15.3                                                                                      | 14.8 | 13.4                                                                                      | -    | -                                                                                            | 17.7 | 15.5 | -    | -          | -    | 56                                                                                  |     |
| 64                                                                                                                                                                                        | 15.5                                                                              | 14.1                                                                                      | 13.7 | 12.3                                                                                      | 10.4 | 10.3                                                                                         | 16.9 | 14.9 | 14.3 | -          | -    | 64                                                                                  |     |
| 72                                                                                                                                                                                        | 14.4                                                                              | 13.0                                                                                      | 12.6 | 11.5                                                                                      | 9.5  | 9.5                                                                                          | 16.1 | 14.1 | 13.5 | 12.1       | -    | 72                                                                                  |     |
| 80                                                                                                                                                                                        | 13.1                                                                              | 12.2                                                                                      | 11.3 | 10.9                                                                                      | 8.7  | 8.7                                                                                          | 15.2 | 13.5 | 12.9 | 11.6       | 10.1 | 9.4                                                                                 | 80  |
| 88                                                                                                                                                                                        | 12.2                                                                              | 11.4                                                                                      | 10.4 | 10.2                                                                                      | 8.2  | 8.2                                                                                          | 13.8 | 12.8 | 12.2 | 11.1       | 9.7  | 9.2                                                                                 | 88  |
| 96                                                                                                                                                                                        | 11.1                                                                              | 10.6                                                                                      | 9.5  | 9.5                                                                                       | 7.8  | 7.8                                                                                          | 12.2 | 11.7 | 11.6 | 10.7       | 9.2  | 8.9                                                                                 | 96  |
| 104                                                                                                                                                                                       | 10.1                                                                              | 10.0                                                                                      | 8.9  | 8.9                                                                                       | -    | -                                                                                            | 10.4 | 10.3 | 11.1 | 10.2       | 8.9  | 8.6                                                                                 | 104 |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.2  | 9.2  | 9.9  | 9.8        | 8.6  | 8.4                                                                                 | 112 |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.1  | 8.1  | 8.7  | 8.7        | 8.3  | 8.1                                                                                 | 120 |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.7  | 6.7  | 7.4  | 7.4        | 7.9  | 7.8                                                                                 | 128 |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.9  | 5.9  | 6.6  | 6.6        | 7.1  | 7.1                                                                                 | 136 |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.9  | 4.9  | 5.6  | 5.6        | 6.2  | 6.2                                                                                 | 144 |
| 152                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.1  | 4.1  | 4.9  | 4.9        | 5.2  | 5.2                                                                                 | 152 |
| 160                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.3  | 3.3  | 3.9  | 3.9        | 4.5  | 4.5                                                                                 | 160 |
| 168                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 3.1  | 3.1        | -    | -                                                                                   | 168 |
| 176                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.3  | 2.3        | -    | -                                                                                   | 176 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |      |     |  196.9 ft |     |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°  |     | 0°                                                                                             |     | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |     |      |     |                                                                                                |     |      |     |      |     | ft                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.8                                                                                         | 11.0 | -    | -   | -    | -   | -                                                                                              | -   | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 12.4                                                                                         | 11.0 | -    | -   | -    | -   | 11.2                                                                                           | 8.8 | -    | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 11.9                                                                                         | 11.0 | -    | -   | -    | -   | 10.8                                                                                           | 8.8 | -    | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 11.0                                                                                         | 10.3 | 10.5 | 9.6 | -    | -   | 9.2                                                                                            | 8.5 | -    | -   | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 8.8                                                                                          | 8.8  | 10.2 | 9.3 | -    | -   | 7.2                                                                                            | 7.2 | 9.6  | 8.7 | -    | -   | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 7.0                                                                                          | 7.0  | 9.4  | 8.9 | 8.6  | -   | 5.5                                                                                            | 5.5 | 8.2  | 8.0 | -    | -   | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 5.4                                                                                          | 5.4  | 7.8  | 7.8 | 8.4  | 7.7 | 3.9                                                                                            | 3.9 | 6.5  | 6.5 | 7.9  | 7.3 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 4.2                                                                                          | 4.2  | 6.3  | 6.3 | 7.8  | 7.4 | -                                                                                              | -   | 5.0  | 5.0 | 7.2  | 7.0 | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 3.1                                                                                          | 3.1  | 5.0  | 5.0 | 6.7  | 6.6 | -                                                                                              | -   | 3.7  | 3.7 | 5.8  | 5.8 | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | -                                                                                            | -    | 3.8  | 3.8 | 5.5  | 5.5 | -                                                                                              | -   | 2.7  | 2.7 | 4.5  | 4.5 | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | 2.9  | 2.9 | 4.5  | 4.5 | -                                                                                              | -   | -    | -   | 3.4  | 3.4 | 144                                                                                   |  |
| 152                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 3.4  | 3.4 | -                                                                                              | -   | -    | -   | -    | -   | 152                                                                                   |  |



# HAV-HY

|  33,100 lb +  33,100 lb |  |       |  16.4 ft |      |  15.6 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|
|                         |  |       |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |      |      |
|                                                                                                                                                                                           |  | 0,3°  | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |
|                                                                                                                                                                                           |  | 0°    |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            | 36°  |      |
| ft                                                                                                                                                                                        |  |       |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft   |      |
| 10                                                                                                                                                                                        |  | 119.2 | 105.7                                                                                     | 89.2 | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 10   |
| 12                                                                                                                                                                                        |  | 113.1 | 101.2                                                                                     | 85.9 | 80.0                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | 12   |
| 14                                                                                                                                                                                        |  | 107.3 | 97.2                                                                                      | 82.9 | 77.5                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | 14   |
| 16                                                                                                                                                                                        |  | 102.0 | 93.4                                                                                      | 80.1 | 75.4                                                                                      | 65.7     | 61.8                                                                                         | -    | -    | -    | -          | -    | 16   |
| 18                                                                                                                                                                                        |  | 97.4  | 90.0                                                                                      | 77.8 | 73.4                                                                                      | 64.4     | 60.7                                                                                         | -    | -    | -    | -          | -    | 18   |
| 20                                                                                                                                                                                        |  | 93.1  | 86.8                                                                                      | 75.5 | 71.4                                                                                      | 63.1     | 59.6                                                                                         | -    | -    | -    | -          | -    | 20   |
| 24                                                                                                                                                                                        |  | 84.5  | 81.1                                                                                      | 71.6 | 68.0                                                                                      | 60.2     | 57.9                                                                                         | -    | -    | -    | -          | -    | 24   |
| 28                                                                                                                                                                                        |  | 70.7  | 70.7                                                                                      | 67.6 | 65.3                                                                                      | 57.2     | 56.3                                                                                         | 60.2 | 53.8 | -    | -          | -    | 28   |
| 32                                                                                                                                                                                        |  | 56.7  | 56.7                                                                                      | 58.3 | 57.9                                                                                      | 54.9     | 54.1                                                                                         | 51.7 | 47.3 | 52.1 | 46.5       | -    | 32   |
| 36                                                                                                                                                                                        |  | 47.6  | 47.6                                                                                      | 48.8 | 48.8                                                                                      | 48.4     | 48.0                                                                                         | 45.0 | 42.0 | 46.3 | 42.6       | 47.0 | 39.6 |
| 40                                                                                                                                                                                        |  | 39.7  | 39.7                                                                                      | 40.6 | 40.6                                                                                      | -        | -                                                                                            | 39.7 | 37.9 | 40.3 | 38.4       | 41.6 | 38.6 |
| 48                                                                                                                                                                                        |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 30.4 | 30.1 | 30.8 | 30.7       | 31.6 | 31.3 |
| 56                                                                                                                                                                                        |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 23.9 | 23.9 | 24.7 | 24.7       | 24.9 | 24.8 |
| 64                                                                                                                                                                                        |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 18.9 | 18.9 | 19.5 | 19.5       | 20.1 | 20.1 |
| 72                                                                                                                                                                                        |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 15.1 | 15.1 | 15.7 | 15.7       | 16.2 | 16.2 |
| 80                                                                                                                                                                                        |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 12.4 | 12.4 | 12.8 | 12.8       | 13.1 | 13.1 |
| 88                                                                                                                                                                                        |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 10.1 | 10.1 | 10.5 | 10.5       | 10.7 | 10.7 |
| 96                                                                                                                                                                                        |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 8.1  | 8.1  | 8.5  | 8.5        | 8.7  | 8.7  |
| 104                                                                                                                                                                                       |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 6.4  | 6.4  | 6.6  | 6.6        | 6.8  | 6.8  |
| 112                                                                                                                                                                                       |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.0  | 5.0  | 5.2  | 5.2        | -    | -    |
| 120                                                                                                                                                                                       |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.7  | 3.7  | 3.9  | 3.9        | -    | -    |
| 128                                                                                                                                                                                       |  | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 2.8  | 2.8  | -    | -          | -    | -    |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 48                                                                                  |                                                                                     | 25.6                                                                                         | 23.6 | -    | -    | -        | -    | -                                                                                              | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 20.0                                                                                         | 18.8 | 21.1 | 19.9 | 22.2     | 20.9 | 17.8                                                                                           | 16.9 | 19.0 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 15.6                                                                                         | 15.0 | 16.7 | 16.0 | 17.6     | 16.7 | 13.8                                                                                           | 13.2 | 14.7 | 14.2 | 15.6 | 15.1 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 12.2                                                                                         | 12.0 | 13.1 | 12.6 | 13.8     | 13.3 | 10.4                                                                                           | 10.2 | 11.3 | 11.1 | 12.0 | 11.8 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 9.3                                                                                          | 9.3  | 10.2 | 10.0 | 10.8     | 10.6 | 7.8                                                                                            | 7.8  | 8.4  | 8.4  | 9.3  | 9.3  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 7.0                                                                                          | 7.0  | 7.7  | 7.7  | 8.3      | 8.3  | 5.4                                                                                            | 5.4  | 6.1  | 6.1  | 6.8  | 6.8  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 5.0                                                                                          | 5.0  | 5.6  | 5.6  | 6.2      | 6.2  | 3.6                                                                                            | 3.6  | 4.2  | 4.2  | 4.8  | 4.8  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 3.3                                                                                          | 3.3  | 3.9  | 3.9  | 4.2      | 4.2  | -                                                                                              | -    | 2.6  | 2.6  | 3.1  | 3.1  | 104                                                                                   |  |

# HAV-HY

|  33,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |     |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |     |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |     |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |     |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |     |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |     |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |     |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |     |
| 32                                                                                                                                                                                        |                                                                                   | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1 | 39.7 | -          | -    | 32                                                                                  |     |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 42.1 | 37.2 | -          | -    | 36                                                                                  |     |
| 40                                                                                                                                                                                        |                                                                                   | 39.0                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 38.5 | 35.4 | 35.3       | -    | 40                                                                                  |     |
| 48                                                                                                                                                                                        |                                                                                   | 32.4                                                                                      | 31.5 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 30.6 | 29.2 | 31.5       | 28.3 | 48                                                                                  |     |
| 56                                                                                                                                                                                        |                                                                                   | 25.4                                                                                      | 25.4 | 25.8                                                                                      | 25.5 | 21.7                                                                                         | 21.7 | 24.3 | 24.1 | 25.2       | 24.5 | 56                                                                                  |     |
| 64                                                                                                                                                                                        |                                                                                   | 20.5                                                                                      | 20.5 | 21.0                                                                                      | 21.0 | -                                                                                            | -    | 19.7 | 19.7 | 20.2       | 20.1 | 64                                                                                  |     |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 16.0 | 16.0 | 17.0       | 17.0 | 72                                                                                  |     |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.1 | 13.1 | 14.1       | 14.1 | 80                                                                                  |     |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.7 | 10.7 | 11.6       | 11.6 | 88                                                                                  |     |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.9  | 8.9  | 9.6        | 9.6  | 96                                                                                  |     |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.1  | 7.1  | 7.9        | 7.9  | 104                                                                                 |     |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.7  | 5.7  | 6.3        | 6.3  | 112                                                                                 |     |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.4  | 4.4  | 5.0        | 5.0  | 120                                                                                 |     |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.3  | 3.3  | 3.7        | 3.7  | 128                                                                                 |     |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 2.4  | 2.4  | 2.8        | 2.8  | 136                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |     |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |     | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |     | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 20.0                                                                                         | 18.5 | -    | -    | -        | -    | 18.1                                                                                           | 15.8 | -    | -   | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 15.8                                                                                         | 14.8 | 18.0 | -    | -        | -    | 13.8                                                                                           | 13.0 | -    | -   | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 12.2                                                                                         | 11.7 | 14.2 | 13.5 | -        | -    | 10.4                                                                                           | 10.2 | 12.4 | -   | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 9.3                                                                                          | 9.3  | 11.0 | 10.9 | 12.8     | 12.4 | 7.6                                                                                            | 7.6  | 9.5  | 9.5 | 11.3 | 11.1 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 7.0                                                                                          | 7.0  | 8.5  | 8.5  | 10.0     | 10.0 | 5.3                                                                                            | 5.3  | 7.0  | 7.0 | 8.7  | 8.7  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 5.1                                                                                          | 5.1  | 6.5  | 6.5  | 7.7      | 7.7  | 3.6                                                                                            | 3.6  | 5.0  | 5.0 | 6.5  | 6.5  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 3.5                                                                                          | 3.5  | 4.8  | 4.8  | 5.9      | 5.9  | -                                                                                              | -    | 3.5  | 3.5 | 4.6  | 4.6  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5  | 4.3      | 4.3  | -                                                                                              | -    | -    | -   | -    | -    | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.0      | 3.0  | -                                                                                              | -    | -    | -   | -    | -    | 120                                                                                   |  |



# HAV-HY

|  33,100 lb +  33,100 lb |      |      |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|
|                         |      |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |     |
| 0,3°                                                                                                                                                                                      |      | 1°   | 0,3°                                                                                      |      | 1°                                                                                        |      | 0,3°                                                                                         |      | 1°   |      | 0,3°       |      | 1°                                                                                  |     |
| 0°                                                                                                                                                                                        |      | 18°  |                                                                                           | 36°  |                                                                                           | 0°   |                                                                                              | 18°  |      | 36°  |            |      |                                                                                     |     |
| ft                                                                                                                                                                                        |      |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |     |
| 14                                                                                                                                                                                        | 44.5 | 37.4 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 14  |
| 16                                                                                                                                                                                        | 43.0 | 36.4 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 16  |
| 18                                                                                                                                                                                        | 41.6 | 35.3 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 18  |
| 20                                                                                                                                                                                        | 40.1 | 34.2 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 20  |
| 24                                                                                                                                                                                        | 37.4 | 32.1 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 24  |
| 28                                                                                                                                                                                        | 34.9 | 30.3 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 28  |
| 32                                                                                                                                                                                        | 32.6 | 28.5 | 25.5                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 32  |
| 36                                                                                                                                                                                        | 30.6 | 27.0 | 24.1                                                                                      | 21.8 | -                                                                                         | -    | 30.0                                                                                         | 24.8 | -    | -    | -          | -    | -                                                                                   | 36  |
| 40                                                                                                                                                                                        | 28.6 | 25.6 | 22.8                                                                                      | 20.8 | -                                                                                         | -    | 29.2                                                                                         | 24.1 | -    | -    | -          | -    | -                                                                                   | 40  |
| 48                                                                                                                                                                                        | 25.5 | 23.3 | 20.7                                                                                      | 19.0 | 16.3                                                                                      | 15.8 | 27.0                                                                                         | 22.9 | -    | -    | -          | -    | -                                                                                   | 48  |
| 56                                                                                                                                                                                        | 23.0 | 21.2 | 18.9                                                                                      | 17.5 | 14.6                                                                                      | 14.6 | 23.2                                                                                         | 21.2 | 20.6 | 18.4 | -          | -    | -                                                                                   | 56  |
| 64                                                                                                                                                                                        | 20.7 | 19.3 | 17.3                                                                                      | 16.3 | 13.4                                                                                      | 13.4 | 19.4                                                                                         | 18.8 | 19.4 | 17.6 | -          | -    | -                                                                                   | 64  |
| 72                                                                                                                                                                                        | 18.1 | 17.9 | 15.7                                                                                      | 15.2 | 12.6                                                                                      | 12.6 | 16.4                                                                                         | 16.4 | 17.4 | 16.6 | 15.0       | 13.9 | -                                                                                   | 72  |
| 80                                                                                                                                                                                        | 15.3 | 15.3 | 14.4                                                                                      | 14.4 | -                                                                                         | -    | 13.7                                                                                         | 13.7 | 14.6 | 14.6 | 14.3       | 13.4 | -                                                                                   | 80  |
| 88                                                                                                                                                                                        | -    | -    | -                                                                                         | -    | -                                                                                         | -    | 11.4                                                                                         | 11.4 | 12.6 | 12.5 | 13.0       | 12.6 | -                                                                                   | 88  |
| 96                                                                                                                                                                                        | -    | -    | -                                                                                         | -    | -                                                                                         | -    | 9.5                                                                                          | 9.5  | 10.7 | 10.7 | 11.3       | 11.3 | -                                                                                   | 96  |
| 104                                                                                                                                                                                       | -    | -    | -                                                                                         | -    | -                                                                                         | -    | 7.9                                                                                          | 7.9  | 9.0  | 9.0  | 9.9        | 9.9  | -                                                                                   | 104 |
| 112                                                                                                                                                                                       | -    | -    | -                                                                                         | -    | -                                                                                         | -    | 6.3                                                                                          | 6.3  | 7.4  | 7.4  | 8.3        | 8.3  | -                                                                                   | 112 |
| 120                                                                                                                                                                                       | -    | -    | -                                                                                         | -    | -                                                                                         | -    | 5.2                                                                                          | 5.2  | 6.1  | 6.1  | 6.7        | 6.7  | -                                                                                   | 120 |
| 128                                                                                                                                                                                       | -    | -    | -                                                                                         | -    | -                                                                                         | -    | 4.0                                                                                          | 4.0  | 4.8  | 4.8  | 5.5        | 5.5  | -                                                                                   | 128 |
| 136                                                                                                                                                                                       | -    | -    | -                                                                                         | -    | -                                                                                         | -    | 3.0                                                                                          | 3.0  | 3.8  | 3.8  | 4.3        | 4.3  | -                                                                                   | 136 |
| 144                                                                                                                                                                                       | -    | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 2.9  | 2.9  | 3.1        | 3.1  | -                                                                                   | 144 |

|   |           |  181.1 ft |           |         |           |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1° | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°      | 18°       | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |         |           |                                                                                                |         |         |         | ft                                                                                    |     |
| 56                                                                                                                                                                      | 18.0 15.7 | - -                                                                                          | - -       | - -     | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 56  |
| 64                                                                                                                                                                      | 15.4 14.4 | - -                                                                                          | - -       | - -     | 13.5 12.3 | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 64  |
| 72                                                                                                                                                                      | 12.0 11.7 | - -                                                                                          | - -       | - -     | 10.2 10.2 | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 72  |
| 80                                                                                                                                                                      | 9.1 9.1   | 11.9 11.7                                                                                    | - -       | 7.6 7.6 | 10.4 -    | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 80  |
| 88                                                                                                                                                                      | 7.0 7.0   | 9.4 9.4                                                                                      | 11.3 11.3 | 5.3 5.3 | 7.9 7.9   | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 88  |
| 96                                                                                                                                                                      | 5.1 5.1   | 7.4 7.4                                                                                      | 9.2 9.2   | 3.6 3.6 | 5.9 5.9   | 8.1 8.1                                                                                        | - -     | - -     | - -     | - -                                                                                   | 96  |
| 104                                                                                                                                                                     | 3.7 3.7   | 5.5 5.5                                                                                      | 7.3 7.3   | - -     | 4.2 4.2   | 6.2 6.2                                                                                        | - -     | - -     | - -     | - -                                                                                   | 104 |
| 112                                                                                                                                                                     | - -       | 4.1 4.1                                                                                      | 5.7 5.7   | - -     | - -       | 4.6 4.6                                                                                        | - -     | - -     | - -     | - -                                                                                   | 112 |
| 120                                                                                                                                                                     | - -       | 2.8 2.8                                                                                      | 4.3 4.3   | - -     | - -       | 3.2 3.2                                                                                        | - -     | - -     | - -     | - -                                                                                   | 120 |
| 128                                                                                                                                                                     | - -       | - -                                                                                          | 3.1 3.1   | - -     | - -       | - -                                                                                            | - -     | - -     | - -     | - -                                                                                   | 128 |

# HAV-HY

|  33,100 lb +  33,100 lb |                                                                                   |  75.5 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft  |
| 18                                                                                                                                                                                        |                                                                                   | 27.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18  |
| 20                                                                                                                                                                                        |                                                                                   | 27.0                                                                                      | 23.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20  |
| 24                                                                                                                                                                                        |                                                                                   | 25.9                                                                                      | 22.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24  |
| 28                                                                                                                                                                                        |                                                                                   | 24.5                                                                                      | 21.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28  |
| 32                                                                                                                                                                                        |                                                                                   | 23.4                                                                                      | 20.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 32  |
| 36                                                                                                                                                                                        |                                                                                   | 22.2                                                                                      | 19.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 36  |
| 40                                                                                                                                                                                        |                                                                                   | 21.0                                                                                      | 18.4 | 17.9                                                                                      | -    | -                                                                                            | -    | 19.5 | 17.1 | -          | -    | 40  |
| 48                                                                                                                                                                                        |                                                                                   | 18.9                                                                                      | 16.8 | 16.2                                                                                      | 14.6 | -                                                                                            | -    | 18.5 | 16.3 | -          | -    | 48  |
| 56                                                                                                                                                                                        |                                                                                   | 17.2                                                                                      | 15.3 | 14.8                                                                                      | 13.4 | -                                                                                            | -    | 17.7 | 15.5 | -          | -    | 56  |
| 64                                                                                                                                                                                        |                                                                                   | 15.5                                                                                      | 14.1 | 13.7                                                                                      | 12.3 | 10.4                                                                                         | 10.3 | 16.8 | 14.9 | 14.3       | -    | 64  |
| 72                                                                                                                                                                                        |                                                                                   | 14.4                                                                                      | 13.0 | 12.6                                                                                      | 11.5 | 9.5                                                                                          | 9.5  | 15.5 | 13.9 | 13.5       | 12.1 | 72  |
| 80                                                                                                                                                                                        |                                                                                   | 13.1                                                                                      | 12.2 | 11.3                                                                                      | 10.9 | 8.7                                                                                          | 8.7  | 13.4 | 12.8 | 12.9       | 11.6 | 80  |
| 88                                                                                                                                                                                        |                                                                                   | 12.2                                                                                      | 11.4 | 10.4                                                                                      | 10.2 | 8.2                                                                                          | 8.2  | 11.6 | 11.6 | 11.9       | 11.1 | 88  |
| 96                                                                                                                                                                                        |                                                                                   | 11.1                                                                                      | 10.6 | 9.5                                                                                       | 9.5  | 7.8                                                                                          | 7.8  | 9.6  | 9.6  | 10.7       | 10.3 | 96  |
| 104                                                                                                                                                                                       |                                                                                   | 10.1                                                                                      | 10.0 | 8.9                                                                                       | 8.9  | -                                                                                            | -    | 7.9  | 7.9  | 9.4        | 9.4  | 104 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.5  | 6.5  | 8.1        | 8.1  | 112 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.3  | 5.3  | 6.7        | 6.7  | 120 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.2  | 4.2  | 5.5        | 5.5  | 128 |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.3  | 3.3  | 4.4        | 4.4  | 136 |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 2.5  | 2.5  | 3.4        | 3.4  | 144 |
| 152                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | 3.2        | 3.2  | 152 |

|                                                                                     |                                                                                     |  181.1 ft |      |          |     |      |     |  196.9 ft |     |      |     |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|----------|-----|------|-----|------------------------------------------------------------------------------------------------|-----|------|-----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3°     | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1°  | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°      |     | 36°  |     | 0°                                                                                             |     | 18°  |     | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      | 1,000 lb |     |      |     |                                                                                                |     |      |     |      |    | ft                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.8                                                                                         | 11.0 | -        | -   | -    | -   | -                                                                                              | -   | -    | -   | -    | -  | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 11.1                                                                                         | 10.8 | -        | -   | -    | -   | 9.1                                                                                            | 8.8 | -    | -   | -    | -  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 8.4                                                                                          | 8.4  | -        | -   | -    | -   | 6.7                                                                                            | 6.7 | -    | -   | -    | -  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 6.2                                                                                          | 6.2  | 9.4      | 9.0 | -    | -   | 4.7                                                                                            | 4.7 | -    | -   | -    | -  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 4.5                                                                                          | 4.5  | 7.4      | 7.4 | -    | -   | 2.9                                                                                            | 2.9 | 5.9  | 5.9 | -    | -  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 3.0                                                                                          | 3.0  | 5.7      | 5.7 | 8.0  | -   | -                                                                                              | -   | 4.2  | 4.2 | -    | -  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | 4.1      | 4.1 | 6.3  | 6.3 | -                                                                                              | -   | -    | -   | 5.2  | -  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | -                                                                                            | -    | 2.8      | 2.8 | 5.0  | 5.0 | -                                                                                              | -   | -    | -   | 3.9  | -  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | -                                                                                            | -    | -        | -   | 3.7  | 3.7 | -                                                                                              | -   | -    | -   | -    | -  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | -                                                                                            | -    | -        | -   | 2.7  | 2.7 | -                                                                                              | -   | -    | -   | -    | -  | 136                                                                                   |  |

# HAV-HY

|  11,000 lb +  33,100 lb |                                                                                   |  16.4 ft |       |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|----------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |       |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                        |
|  ft                                                                                                      |  | 0,3°                                                                                      | 1°    | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  ft |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |       | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                        |
| 1,000 lb                                                                                                                                                                                  |                                                                                   |                                                                                           |       |                                                                                           |      |                                                                                              |      |      |      |            |      |                                                                                        |
| 10                                                                                                                                                                                        |                                                                                   | 119.2                                                                                     | 105.7 | 89.2                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                     |
| 12                                                                                                                                                                                        |                                                                                   | 113.1                                                                                     | 101.2 | 85.9                                                                                      | 80.0 | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                     |
| 14                                                                                                                                                                                        |                                                                                   | 107.3                                                                                     | 97.2  | 82.9                                                                                      | 77.5 | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                     |
| 16                                                                                                                                                                                        |                                                                                   | 102.0                                                                                     | 93.4  | 80.1                                                                                      | 75.4 | 65.7                                                                                         | 61.8 | -    | -    | -          | -    | 16                                                                                     |
| 18                                                                                                                                                                                        |                                                                                   | 97.4                                                                                      | 90.0  | 77.8                                                                                      | 73.4 | 64.4                                                                                         | 60.7 | -    | -    | -          | -    | 18                                                                                     |
| 20                                                                                                                                                                                        |                                                                                   | 92.2                                                                                      | 86.4  | 75.5                                                                                      | 71.4 | 63.1                                                                                         | 59.6 | -    | -    | -          | -    | 20                                                                                     |
| 24                                                                                                                                                                                        |                                                                                   | 72.5                                                                                      | 72.5  | 69.8                                                                                      | 67.2 | 60.2                                                                                         | 57.9 | -    | -    | -          | -    | 24                                                                                     |
| 28                                                                                                                                                                                        |                                                                                   | 55.5                                                                                      | 55.5  | 57.5                                                                                      | 57.5 | 55.8                                                                                         | 55.2 | 48.8 | 44.2 | -          | -    | 28                                                                                     |
| 32                                                                                                                                                                                        |                                                                                   | 44.1                                                                                      | 44.1  | 45.5                                                                                      | 45.5 | 46.8                                                                                         | 46.8 | 42.4 | 38.0 | 42.6       | 36.9 | 32                                                                                     |
| 36                                                                                                                                                                                        |                                                                                   | 36.6                                                                                      | 36.6  | 37.7                                                                                      | 37.7 | 38.6                                                                                         | 38.6 | 36.8 | 33.3 | 37.5       | 34.8 | 36                                                                                     |
| 40                                                                                                                                                                                        |                                                                                   | 30.2                                                                                      | 30.2  | 31.0                                                                                      | 31.0 | -                                                                                            | -    | 31.7 | 29.0 | 33.0       | 30.3 | 40                                                                                     |
| 48                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 23.2 | 22.6 | 24.3       | 23.7 | 48                                                                                     |
| 56                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 17.5 | 17.5 | 18.4       | 18.4 | 56                                                                                     |
| 64                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 13.5 | 13.5 | 14.2       | 14.2 | 64                                                                                     |
| 72                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 10.4 | 10.4 | 10.9       | 10.9 | 72                                                                                     |
| 80                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 8.0  | 8.0  | 8.5        | 8.5  | 80                                                                                     |
| 88                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 6.0  | 6.0  | 6.4        | 6.4  | 88                                                                                     |
| 96                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 4.2  | 4.2  | 4.7        | 4.7  | 96                                                                                     |
| 104                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -     | -                                                                                         | -    | -                                                                                            | -    | 2.8  | 2.8  | 3.1        | 3.1  | 104                                                                                    |

|                                                                                        |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |     |      |     |                                                                                          |  |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|-----|------------------------------------------------------------------------------------------|--|
|  ft |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°  |  ft |  |
|                                                                                        |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |     | 36°  |     |                                                                                          |  |
|                                                                                        |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |     |      |     |                                                                                          |  |
| 48                                                                                     |                                                                                     | 17.3                                                                                         | 16.1 | -    | -    | -    | -    | -                                                                                              | -    | -    | -   | -    | -   | 48                                                                                       |  |
| 56                                                                                     |                                                                                     | 12.8                                                                                         | 12.1 | 13.9 | 13.2 | 14.9 | 14.2 | 10.7                                                                                           | 10.4 | 11.9 | -   | -    | -   | 56                                                                                       |  |
| 64                                                                                     |                                                                                     | 9.3                                                                                          | 9.0  | 10.2 | 10.1 | 11.1 | 10.8 | 7.4                                                                                            | 7.4  | 8.4  | 8.3 | 9.3  | 9.2 | 64                                                                                       |  |
| 72                                                                                     |                                                                                     | 6.5                                                                                          | 6.4  | 7.3  | 7.3  | 8.0  | 8.0  | 4.7                                                                                            | 4.7  | 5.6  | 5.6 | 6.2  | 6.2 | 72                                                                                       |  |
| 80                                                                                     |                                                                                     | 4.1                                                                                          | 4.1  | 5.0  | 5.0  | 5.4  | 5.4  | -                                                                                              | -    | -    | -   | 3.9  | 3.9 | 80                                                                                       |  |
| 88                                                                                     |                                                                                     | -                                                                                            | -    | -    | -    | 3.6  | 3.6  | -                                                                                              | -    | -    | -   | -    | -   | 88                                                                                       |  |

# HAV-HY

|  11,000 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 39.9 | 33.9 | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 39.4                                                                                      | 36.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 35.5 | 32.1 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 33.2                                                                                      | 33.2 | 32.6                                                                                      | 30.6 | 25.8                                                                                         | 24.6 | 31.4 | 28.4 | 30.5       | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 24.8                                                                                      | 24.8 | 26.3                                                                                      | 26.3 | 23.3                                                                                         | 23.0 | 24.1 | 22.3 | 25.3       | 24.0 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 19.0                                                                                      | 19.0 | 20.1                                                                                      | 20.1 | 20.5                                                                                         | 20.5 | 18.4 | 17.9 | 20.1       | 19.7 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 15.0                                                                                      | 15.0 | 15.6                                                                                      | 15.6 | -                                                                                            | -    | 14.2 | 14.2 | 15.8       | 15.8 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.1 | 11.1 | 12.4       | 12.4 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.7  | 8.7  | 9.8        | 9.8  | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.6  | 6.6  | 7.7        | 7.7  | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.0  | 5.0  | 6.0        | 6.0  | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.5  | 3.5  | 4.4        | 4.4  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 112                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |          |     |  196.9 ft |      |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|----------|-----|------------------------------------------------------------------------------------------------|------|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3°     | 1°  | 0,3°                                                                                           | 1°   | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°      |     | 0°                                                                                             |      | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |     | 1,000 lb |     |                                                                                                |      |      |    |      |    | ft                                                                                    |  |
| 56                                                                                  |                                                                                     | 12.9                                                                                         | 12.0 | -    | -   | -        | -   | 10.9                                                                                           | 10.3 | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 9.3                                                                                          | 9.1  | 11.5 | -   | -        | -   | 7.3                                                                                            | 7.2  | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 6.2                                                                                          | 6.2  | 8.4  | 8.4 | -        | -   | 4.5                                                                                            | 4.5  | 6.7  | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 4.1                                                                                          | 4.1  | 5.8  | 5.8 | 7.6      | 7.6 | -                                                                                              | -    | 4.3  | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | -                                                                                            | -    | 3.9  | 3.9 | 5.3      | 5.3 | -                                                                                              | -    | -    | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | -                                                                                            | -    | -    | -   | 3.6      | 3.6 | -                                                                                              | -    | -    | -  | -    | -  | 96                                                                                    |  |

# HAV-HY

|  11,000 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 44.5                                                                                      | 37.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 43.0                                                                                      | 36.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 41.6                                                                                      | 35.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 40.1                                                                                      | 34.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 37.4                                                                                      | 32.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 34.9                                                                                      | 30.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 32.6                                                                                      | 28.5 | 25.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 30.6                                                                                      | 27.0 | 24.1                                                                                      | 21.8 | -                                                                                            | -    | 28.8 | 24.6 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 28.6                                                                                      | 25.6 | 22.8                                                                                      | 20.8 | -                                                                                            | -    | 27.1 | 23.6 | -          | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 25.1                                                                                      | 23.3 | 20.7                                                                                      | 19.0 | 16.3                                                                                         | 15.8 | 23.6 | 20.9 | -          | -    | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 20.6                                                                                      | 20.3 | 18.9                                                                                      | 17.5 | 14.6                                                                                         | 14.6 | 19.1 | 17.8 | 19.7       | 17.9 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 16.4                                                                                      | 16.4 | 17.3                                                                                      | 16.3 | 13.4                                                                                         | 13.4 | 14.9 | 14.3 | 16.6       | 16.4 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | 13.5                                                                                      | 13.5 | 14.4                                                                                      | 14.4 | 12.6                                                                                         | 12.6 | 11.7 | 11.7 | 13.7       | 13.7 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | 11.2                                                                                      | 11.2 | 11.8                                                                                      | 11.8 | -                                                                                            | -    | 9.2  | 9.2  | 11.1       | 11.1 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.3  | 7.3  | 9.1        | 9.1  | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.7  | 5.7  | 7.3        | 7.3  | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.4  | 4.4  | 5.7        | 5.7  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.0  | 3.0  | 4.3        | 4.3  | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | 3.1        | 3.1  | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 128                                                                                 |

|                                                                                        |                                                                                     |  181.1 ft |      |      |     |      |     |  196.9 ft |     |      |    |      |    |                                                                                       |  |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|------|-----|------------------------------------------------------------------------------------------------|-----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  ft |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                        |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°  |     | 0°                                                                                             |     | 18°  |    | 36°  |    |                                                                                       |  |
| 1,000 lb                                                                               |                                                                                     |                                                                                              |      |      |     |      |     |                                                                                                |     |      |    |      |    |                                                                                       |  |
| 56                                                                                     |                                                                                     | 12.7                                                                                         | 11.9 | -    | -   | -    | -   | -                                                                                              | -   | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                     |                                                                                     | 9.0                                                                                          | 9.0  | -    | -   | -    | -   | 7.0                                                                                            | 7.0 | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                     |                                                                                     | 6.2                                                                                          | 6.2  | -    | -   | -    | -   | 4.5                                                                                            | 4.5 | -    | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                     |                                                                                     | 4.1                                                                                          | 4.1  | 6.7  | 6.7 | -    | -   | -                                                                                              | -   | -    | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                     |                                                                                     | -                                                                                            | -    | 4.7  | 4.7 | 7.0  | 7.0 | -                                                                                              | -   | -    | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                     |                                                                                     | -                                                                                            | -    | 3.1  | 3.1 | 5.0  | 5.0 | -                                                                                              | -   | -    | -  | -    | -  | 96                                                                                    |  |
| 104                                                                                    |                                                                                     | -                                                                                            | -    | -    | -   | 3.5  | 3.5 | -                                                                                              | -   | -    | -  | -    | -  | 104                                                                                   |  |

# HAV-HY

|  11,000 lb +  33,100 lb |                                                                                   |  75.5 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                        |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|----------------------------------------------------------------------------------------|-----|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                        |     |  |
|  ft                                                                                                      |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  ft |     |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                        | 36° |  |
|                                                                                                                                                                                           |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      |                                                                                        |     |  |
| 18                                                                                                                                                                                        |                                                                                   | 27.7                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                     |     |  |
| 20                                                                                                                                                                                        |                                                                                   | 27.0                                                                                      | 23.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                     |     |  |
| 24                                                                                                                                                                                        |                                                                                   | 25.9                                                                                      | 22.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                     |     |  |
| 28                                                                                                                                                                                        |                                                                                   | 24.5                                                                                      | 21.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                     |     |  |
| 32                                                                                                                                                                                        |                                                                                   | 23.4                                                                                      | 20.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 32                                                                                     |     |  |
| 36                                                                                                                                                                                        |                                                                                   | 22.2                                                                                      | 19.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 36                                                                                     |     |  |
| 40                                                                                                                                                                                        |                                                                                   | 21.0                                                                                      | 18.4 | 17.9                                                                                      | -    | -                                                                                            | -    | 19.5 | 17.1 | -          | -    | 40                                                                                     |     |  |
| 48                                                                                                                                                                                        |                                                                                   | 18.9                                                                                      | 16.8 | 16.2                                                                                      | 14.6 | -                                                                                            | -    | 18.3 | 16.3 | -          | -    | 48                                                                                     |     |  |
| 56                                                                                                                                                                                        |                                                                                   | 17.2                                                                                      | 15.3 | 14.8                                                                                      | 13.4 | -                                                                                            | -    | 16.5 | 15.1 | -          | -    | 56                                                                                     |     |  |
| 64                                                                                                                                                                                        |                                                                                   | 15.5                                                                                      | 14.1 | 13.7                                                                                      | 12.3 | 10.4                                                                                         | 10.3 | 14.0 | 13.6 | 14.3       | -    | 64                                                                                     |     |  |
| 72                                                                                                                                                                                        |                                                                                   | 14.1                                                                                      | 13.0 | 12.6                                                                                      | 11.5 | 9.5                                                                                          | 9.5  | 11.1 | 11.1 | 13.2       | 11.9 | 72                                                                                     |     |  |
| 80                                                                                                                                                                                        |                                                                                   | 11.8                                                                                      | 11.8 | 11.3                                                                                      | 10.9 | 8.7                                                                                          | 8.7  | 8.7  | 8.7  | 11.3       | 10.9 | 80                                                                                     |     |  |
| 88                                                                                                                                                                                        |                                                                                   | 9.8                                                                                       | 9.8  | 10.4                                                                                      | 10.2 | 8.2                                                                                          | 8.2  | 6.9  | 6.9  | 9.2        | 9.2  | 88                                                                                     |     |  |
| 96                                                                                                                                                                                        |                                                                                   | 8.3                                                                                       | 8.3  | 9.1                                                                                       | 9.1  | 7.8                                                                                          | 7.8  | 5.3  | 5.3  | 7.3        | 7.3  | 96                                                                                     |     |  |
| 104                                                                                                                                                                                       |                                                                                   | 7.2                                                                                       | 7.2  | 7.5                                                                                       | 7.5  | -                                                                                            | -    | 3.9  | 3.9  | 5.9        | 5.9  | 104                                                                                    |     |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | 4.6        | 4.6  | 112                                                                                    |     |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | 3.5        | 3.5  | 120                                                                                    |     |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 128                                                                                    |     |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 136                                                                                    |     |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 136                                                                                    |     |  |

|                                                                                        |                                                                                     |      |  181.1 ft |      |    |      |    |      |  196.9 ft |      |    |      |    |                                                                                          |  |  |  |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|----|------|----|------|------------------------------------------------------------------------------------------------|------|----|------|----|------------------------------------------------------------------------------------------|--|--|--|
|  ft |  | 0,3° | 1°                                                                                           | 0,3° | 1° | 0,3° | 1° | 0,3° | 1°                                                                                             | 0,3° | 1° | 0,3° | 1° |  ft |  |  |  |
|                                                                                        |                                                                                     | 0°   |                                                                                              | 18°  |    | 36°  |    | 0°   |                                                                                                | 18°  |    | 36°  |    |                                                                                          |  |  |  |
| 1,000 lb                                                                               |                                                                                     |      |                                                                                              |      |    |      |    |      |                                                                                                |      |    |      |    |                                                                                          |  |  |  |
| 64                                                                                     |                                                                                     | 7.9  | 7.9                                                                                          | -    | -  | -    | -  | -    | -                                                                                              | -    | -  | -    | -  | 0                                                                                        |  |  |  |
| 72                                                                                     |                                                                                     | 5.3  | 5.3                                                                                          | -    | -  | -    | -  | -    | -                                                                                              | -    | -  | -    | -  |                                                                                          |  |  |  |



# HAV-HY

|  0 lb + 33,100 lb |                                                                                   |          |  16.4 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                    |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft  |      |      |      |            |                                                                                     |
|                   |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                    |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                 |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft                                                                                  |
| 10                                                                                                 |                                                                                   | 119.2    | 105.7                                                                                     | 89.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |
| 12                                                                                                 |                                                                                   | 113.1    | 101.2                                                                                     | 85.9 | 80.0                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |
| 14                                                                                                 |                                                                                   | 107.3    | 97.2                                                                                      | 82.9 | 77.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                 |                                                                                   | 102.0    | 93.4                                                                                      | 80.1 | 75.4                                                                                      | 65.7 | 61.8                                                                                         | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                 |                                                                                   | 95.6     | 88.3                                                                                      | 77.8 | 73.4                                                                                      | 64.4 | 60.7                                                                                         | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                 |                                                                                   | 87.8     | 82.2                                                                                      | 75.3 | 71.4                                                                                      | 63.1 | 59.6                                                                                         | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                 |                                                                                   | 62.9     | 62.9                                                                                      | 65.7 | 64.6                                                                                      | 59.9 | 57.9                                                                                         | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                 |                                                                                   | 47.8     | 47.8                                                                                      | 49.9 | 49.9                                                                                      | 51.6 | 51.4                                                                                         | 42.7 | 37.6 | -    | -          | 28                                                                                  |
| 32                                                                                                 |                                                                                   | 37.7     | 37.7                                                                                      | 39.3 | 39.3                                                                                      | 40.5 | 40.5                                                                                         | 36.2 | 32.3 | 38.1 | 31.0       | 32                                                                                  |
| 36                                                                                                 |                                                                                   | 31.1     | 31.1                                                                                      | 32.4 | 32.4                                                                                      | 33.2 | 33.2                                                                                         | 31.2 | 28.1 | 32.8 | 29.5       | 36                                                                                  |
| 40                                                                                                 |                                                                                   | 25.4     | 25.4                                                                                      | 26.4 | 26.4                                                                                      | -    | -                                                                                            | 26.5 | 24.2 | 28.0 | 25.5       | 40                                                                                  |
| 48                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 19.5 | 18.7 | 20.5 | 19.7       | 48                                                                                  |
| 56                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 14.4 | 14.3 | 15.3 | 15.2       | 56                                                                                  |
| 64                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 10.8 | 10.8 | 11.5 | 11.5       | 64                                                                                  |
| 72                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.0  | 8.0  | 8.7  | 8.7        | 72                                                                                  |
| 80                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.7  | 5.7  | 6.1  | 6.1        | 80                                                                                  |
| 88                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.9  | 3.9  | 4.2  | 4.2        | 88                                                                                  |
| 96                                                                                                 |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.6  | 2.6        | 96                                                                                  |

|    |     | 181.1 ft |      |          |      |      |    | 196.9 ft |    |      |    |      |    |    |    |
|----|-----|----------|------|----------|------|------|----|----------|----|------|----|------|----|----|----|
|    |     | 0,3°     | 1°   | 0,3°     | 1°   | 0,3° | 1° | 0,3°     | 1° | 0,3° | 1° | 0,3° | 1° |    |    |
|    |     | 0°       |      | 18°      |      | 36°  |    | 0°       |    | 18°  |    | 36°  |    |    |    |
| ft |     |          |      | 1,000 lb |      |      |    |          |    |      |    | ft   |    |    |    |
| 48 |     | 13.1     | 12.5 | -        | -    | -    | -  | -        | -  | -    | -  | -    | -  | -  | 48 |
| 56 | 9.1 | 8.9      | 10.3 | 10.0     | 11.2 | 10.8 | -  | -        | -  | -    | -  | -    | -  | 56 |    |
| 64 | 6.1 | 6.1      | 7.0  | 7.0      | 7.9  | 7.8  | -  | -        | -  | -    | -  | -    | -  | 64 |    |
| 72 | 3.6 | 3.6      | 4.2  | 4.2      | 5.1  | 5.1  | -  | -        | -  | -    | -  | -    | -  | 72 |    |



# HAV-HY

|  0 lb +  33,100 lb |                                                                                   |          |  36.1 ft |      |  15.6 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                      |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |
|                                                                                                     |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                      |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                                                                                                   |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft                                                                                  |
| 10                                                                                                                                                                                   |                                                                                   | 72.7     | 59.8                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |
| 12                                                                                                                                                                                   |                                                                                   | 69.1     | 57.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |
| 14                                                                                                                                                                                   |                                                                                   | 65.8     | 55.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                                                                                                   |                                                                                   | 62.8     | 53.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                                                                                                   |                                                                                   | 60.0     | 51.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                                                                                                   |                                                                                   | 57.4     | 49.3                                                                                      | 44.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                                                                                                   |                                                                                   | 52.7     | 45.9                                                                                      | 41.2 | 37.6                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                                                                                                   |                                                                                   | 48.4     | 42.9                                                                                      | 38.7 | 35.4                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |
| 32                                                                                                                                                                                   |                                                                                   | 41.1     | 39.9                                                                                      | 36.6 | 33.6                                                                                      | 28.2 | 26.3                                                                                         | 34.6 | 28.3 | -    | -          | 32                                                                                  |
| 36                                                                                                                                                                                   |                                                                                   | 34.3     | 34.3                                                                                      | 33.8 | 32.1                                                                                      | 27.0 | 25.4                                                                                         | 30.6 | 27.2 | -    | -          | 36                                                                                  |
| 40                                                                                                                                                                                   |                                                                                   | 28.5     | 28.5                                                                                      | 30.6 | 30.2                                                                                      | 25.8 | 24.6                                                                                         | 26.4 | 23.6 | 27.4 | -          | 40                                                                                  |
| 48                                                                                                                                                                                   |                                                                                   | 21.0     | 21.0                                                                                      | 22.6 | 22.6                                                                                      | 22.6 | 22.3                                                                                         | 20.1 | 18.4 | 22.4 | 20.6       | 48                                                                                  |
| 56                                                                                                                                                                                   |                                                                                   | 16.0     | 16.0                                                                                      | 17.0 | 17.0                                                                                      | 17.8 | 17.8                                                                                         | 15.3 | 14.3 | 17.0 | 16.3       | 56                                                                                  |
| 64                                                                                                                                                                                   |                                                                                   | 12.3     | 12.3                                                                                      | 13.1 | 13.1                                                                                      | -    | -                                                                                            | 11.7 | 11.2 | 13.1 | 12.9       | 64                                                                                  |
| 72                                                                                                                                                                                   |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.7  | 8.7  | 10.0 | 10.0       | 72                                                                                  |
| 80                                                                                                                                                                                   |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.5  | 6.5  | 7.8  | 7.8        | 80                                                                                  |
| 88                                                                                                                                                                                   |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.7  | 4.7  | 5.8  | 5.8        | 88                                                                                  |
| 96                                                                                                                                                                                   |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.1  | 3.1  | 4.0  | 4.0        | 96                                                                                  |
| 104                                                                                                                                                                                  |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.6  | 2.6        | 104                                                                                 |

|    |     |     |  181.1 ft |    |      |    |  196.9 ft |    |      |    |      |    |
|----|-----|-----|----------------------------------------------------------------------------------------------|----|------|----|------------------------------------------------------------------------------------------------|----|------|----|------|----|
|    |     |     | 0,3°                                                                                         | 1° | 0,3° | 1° | 0,3°                                                                                           | 1° | 0,3° | 1° | 0,3° | 1° |
|    |     |     | 0°                                                                                           |    |      |    | 0°                                                                                             |    |      |    |      |    |
| ft |     |     | 1,000 lb                                                                                     |    |      |    |                                                                                                |    |      |    | ft   |    |
| 56 | 9.4 | 8.8 | -                                                                                            | -  | -    | -  | -                                                                                              | -  | -    | -  | -    | 56 |
| 64 | 5.9 | 5.9 | 8.4                                                                                          | -  | -    | -  | -                                                                                              | -  | -    | -  | -    | 64 |
| 72 | 3.4 | 3.4 | 5.6                                                                                          | -  | -    | -  | -                                                                                              | -  | -    | -  | -    | 72 |



# HAV-HY

|  0 lb +  33,100 lb |                                                                                   |      |  55.8 ft |      |  15.6 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |                                                                                     |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                      |                                                                                   |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |     |
|                                                                                                     |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |     |
|                                                                                                                                                                                      |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     | 36° |
| ft                                                                                                                                                                                   |                                                                                   |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |                                                                                     | ft  |
| 14                                                                                                                                                                                   |                                                                                   | 44.5 | 37.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |     |
| 16                                                                                                                                                                                   |                                                                                   | 43.0 | 36.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 16                                                                                  |     |
| 18                                                                                                                                                                                   |                                                                                   | 41.6 | 35.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |     |
| 20                                                                                                                                                                                   |                                                                                   | 40.1 | 34.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |     |
| 24                                                                                                                                                                                   |                                                                                   | 37.4 | 32.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |     |
| 28                                                                                                                                                                                   |                                                                                   | 34.9 | 30.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |     |
| 32                                                                                                                                                                                   |                                                                                   | 32.6 | 28.5                                                                                      | 25.5 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 32                                                                                  |     |
| 36                                                                                                                                                                                   |                                                                                   | 30.6 | 27.0                                                                                      | 24.1 | 21.8                                                                                      | -    | -                                                                                            | 26.6 | 22.7 | -    | -          | 36                                                                                  |     |
| 40                                                                                                                                                                                   |                                                                                   | 28.4 | 25.6                                                                                      | 22.8 | 20.8                                                                                      | -    | -                                                                                            | 25.5 | 22.3 | -    | -          | 40                                                                                  |     |
| 48                                                                                                                                                                                   |                                                                                   | 22.7 | 22.4                                                                                      | 20.7 | 19.0                                                                                      | 16.3 | 15.8                                                                                         | 20.1 | 18.1 | -    | -          | 48                                                                                  |     |
| 56                                                                                                                                                                                   |                                                                                   | 17.5 | 17.5                                                                                      | 18.4 | 17.5                                                                                      | 14.6 | 14.6                                                                                         | 15.3 | 14.3 | 17.8 | 16.5       | 56                                                                                  |     |
| 64                                                                                                                                                                                   |                                                                                   | 13.9 | 13.9                                                                                      | 15.3 | 15.1                                                                                      | 13.4 | 13.4                                                                                         | 11.7 | 11.3 | 14.4 | 13.7       | 64                                                                                  |     |
| 72                                                                                                                                                                                   |                                                                                   | 11.1 | 11.1                                                                                      | 12.2 | 12.2                                                                                      | 12.6 | 12.6                                                                                         | 8.9  | 8.9  | 11.1 | 11.1       | 72                                                                                  |     |
| 80                                                                                                                                                                                   |                                                                                   | 9.0  | 9.0                                                                                       | 9.8  | 9.8                                                                                       | -    | -                                                                                            | 6.8  | 6.8  | 8.7  | 8.7        | 80                                                                                  |     |
| 88                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.0  | 5.0  | 6.7  | 6.7        | 88                                                                                  |     |
| 96                                                                                                                                                                                   |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.5  | 3.5  | 5.1  | 5.1        | 96                                                                                  |     |
| 104                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.3  | 2.3  | 3.7  | 3.7        | 104                                                                                 |     |
| 112                                                                                                                                                                                  |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 112                                                                                 |     |

|                                                                                     |                                                                                    |  181.1 ft |     |      |    |          |    |  196.9 ft |    |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----|------|----|----------|----|----------------------------------------------------------------------------------------------|----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                       | 1°  | 0,3° | 1° | 0,3°     | 1° | 0,3°                                                                                         | 1° | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                    | 0°                                                                                         |     | 18°  |    | 36°      |    | 0°                                                                                           |    | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                    |                                                                                            |     |      |    | 1,000 lb |    |                                                                                              |    |      |    | ft   |    |                                                                                       |  |
| 56                                                                                  |                                                                                    | 8.9                                                                                        | 8.7 | -    | -  | -        | -  | -                                                                                            | -  | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                  |                                                                                    | 5.7                                                                                        | 5.7 | -    | -  | -        | -  | -                                                                                            | -  | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  |                                                                                    | 3.4                                                                                        | 3.4 | -    | -  | -        | -  | -                                                                                            | -  | -    | -  | -    | -  | 72                                                                                    |  |

|  0 lb +  33,100 lb |                                                                                     |      |  75.5 ft |      |      |  15.6 ft |          |    |  32.2 ft/s  |      |      | 360° |   |      | ASME B30.5 |     |    |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|------|---------------------------------------------------------------------------------------------|----------|----|------------------------------------------------------------------------------------------------|------|------|------|---|------|------------|-----|----|---------------------------------------------------------------------------------------|
|                                                                                                                                                                                          |                                                                                     |      |  42.3 ft |      |      |                                                                                             |          |    |  126.0 ft |      |      |      |   |      |            |     |    |                                                                                       |
|                                                                                                       |  | 0,3° |                                                                                             | 1°   |      | 0,3°                                                                                        |          | 1° |                                                                                                | 0,3° |      | 1°   |   | 0,3° |            | 1°  |    |  |
|                                                                                                                                                                                          |                                                                                     | 0°   |                                                                                             |      |      | 18°                                                                                         |          |    |                                                                                                | 36°  |      |      |   | 0°   |            | 18° |    |                                                                                       |
| ft                                                                                                                                                                                       |                                                                                     |      |                                                                                             |      |      |                                                                                             | 1,000 lb |    |                                                                                                |      |      |      |   |      |            |     | ft |                                                                                       |
| 18                                                                                                                                                                                       |                                                                                     | 27.7 | -                                                                                           | -    | -    | -                                                                                           | -        | -  | -                                                                                              | -    | -    | -    | - | -    | -          | -   | -  | 18                                                                                    |
| 20                                                                                                                                                                                       |                                                                                     | 27.0 | 23.3                                                                                        | -    | -    | -                                                                                           | -        | -  | -                                                                                              | -    | -    | -    | - | -    | -          | -   | -  | 20                                                                                    |
| 24                                                                                                                                                                                       |                                                                                     | 25.9 | 22.2                                                                                        | -    | -    | -                                                                                           | -        | -  | -                                                                                              | -    | -    | -    | - | -    | -          | -   | -  | 24                                                                                    |
| 28                                                                                                                                                                                       |                                                                                     | 24.5 | 21.1                                                                                        | -    | -    | -                                                                                           | -        | -  | -                                                                                              | -    | -    | -    | - | -    | -          | -   | -  | 28                                                                                    |
| 32                                                                                                                                                                                       |                                                                                     | 23.4 | 20.2                                                                                        | -    | -    | -                                                                                           | -        | -  | -                                                                                              | -    | -    | -    | - | -    | -          | -   | -  | 32                                                                                    |
| 36                                                                                                                                                                                       |                                                                                     | 22.2 | 19.3                                                                                        | -    | -    | -                                                                                           | -        | -  | -                                                                                              | -    | -    | -    | - | -    | -          | -   | -  | 36                                                                                    |
| 40                                                                                                                                                                                       |                                                                                     | 21.0 | 18.4                                                                                        | 17.9 | -    | -                                                                                           | -        | -  | 19.3                                                                                           | 17.0 | -    | -    | - | -    | -          | -   | -  | 40                                                                                    |
| 48                                                                                                                                                                                       |                                                                                     | 18.9 | 16.8                                                                                        | 16.2 | 14.6 | -                                                                                           | -        | -  | 17.2                                                                                           | 15.4 | -    | -    | - | -    | -          | -   | -  | 48                                                                                    |
| 56                                                                                                                                                                                       |                                                                                     | 17.2 | 15.3                                                                                        | 14.8 | 13.4 | -                                                                                           | -        | -  | 14.4                                                                                           | 13.7 | -    | -    | - | -    | -          | -   | -  | 56                                                                                    |
| 64                                                                                                                                                                                       |                                                                                     | 14.5 | 14.1                                                                                        | 13.7 | 12.3 | 10.4                                                                                        | 10.3     | -  | 10.8                                                                                           | 10.8 | 12.1 | -    | - | -    | -          | -   | -  | 64                                                                                    |
| 72                                                                                                                                                                                       |                                                                                     | 11.7 | 11.7                                                                                        | 12.6 | 11.5 | 9.5                                                                                         | 9.5      | -  | 8.2                                                                                            | 8.2  | 11.3 | 11.3 | - | -    | -          | -   | -  | 72                                                                                    |
| 80                                                                                                                                                                                       |                                                                                     | 9.7  | 9.7                                                                                         | 10.9 | 10.7 | 8.7                                                                                         | 8.7      | -  | 6.1                                                                                            | 6.1  | 8.7  | 8.7  | - | -    | 10.0       | 9.4 | -  | 80                                                                                    |
| 88                                                                                                                                                                                       |                                                                                     | 8.1  | 8.1                                                                                         | 8.9  | 8.9  | 8.2                                                                                         | 8.2      | -  | 4.5                                                                                            | 4.5  | 6.9  | 6.9  | - | -    | 9.1        | 8.7 | -  | 88                                                                                    |
| 96                                                                                                                                                                                       |                                                                                     | 6.6  | 6.6                                                                                         | 7.3  | 7.3  | 7.7                                                                                         | 7.7      | -  | 3.2                                                                                            | 3.2  | 5.3  | 5.3  | - | -    | 7.3        | 7.3 | -  | 96                                                                                    |
| 104                                                                                                                                                                                      |                                                                                     | 5.6  | 5.6                                                                                         | 5.9  | 5.9  | -                                                                                           | -        | -  | -                                                                                              | -    | 3.9  | 3.9  | - | -    | 5.7        | 5.7 | -  | 104                                                                                   |
| 112                                                                                                                                                                                      |                                                                                     | -    | -                                                                                           | -    | -    | -                                                                                           | -        | -  | -                                                                                              | -    | -    | -    | - | -    | 4.3        | 4.3 | -  | 112                                                                                   |
| 120                                                                                                                                                                                      |                                                                                     | -    | -                                                                                           | -    | -    | -                                                                                           | -        | -  | -                                                                                              | -    | -    | -    | - | -    | 3.3        | 3.3 | -  | 120                                                                                   |



# HAV-HY

|  99,200 lb +  33,100 lb |           |  16.4 ft |           |  11.5 ft    |           |  32.2 ft/s |         | 360°    |         | ASME B30.5 |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|---------|---------|---------|------------|--|
|                         |           |  42.3 ft |           |  126.0 ft |           |                                                                                             |         |         |         |            |  |
| 0,3° 1°                                                                                                                                                                                   |           | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                     | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |  |
| 0°                                                                                                                                                                                        |           | 18°                                                                                       | 36°       | 0°                                                                                           | 18°       | 36°                                                                                         | 0°      | 18°     | 36°     |            |  |
| ft                                                                                                                                                                                        |           | 1,000 lb                                                                                  |           |                                                                                              |           |                                                                                             |         |         |         | ft         |  |
| 18                                                                                                                                                                                        | 97.4 90.0 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 18         |  |
| 20                                                                                                                                                                                        | 93.1 86.8 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 20         |  |
| 24                                                                                                                                                                                        | 85.8 81.2 | 71.6 68.0                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 24         |  |
| 28                                                                                                                                                                                        | 79.5 76.4 | 67.6 65.3                                                                                 | 57.2 56.3 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 28         |  |
| 32                                                                                                                                                                                        | 70.7 70.0 | 63.4 62.4                                                                                 | 54.9 54.1 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 32         |  |
| 36                                                                                                                                                                                        | 60.8 60.8 | 58.2 57.8                                                                                 | 53.1 52.5 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 36         |  |
| 40                                                                                                                                                                                        | 51.7 51.7 | 52.5 52.5                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | 40         |  |
| 48                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 39.0 39.0                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | 48         |  |
| 56                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 30.7 30.7                                                                                    | 31.7 31.7 | - -                                                                                         | - -     | - -     | - -     | 56         |  |
| 64                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 25.6 25.6                                                                                    | 25.6 25.6 | 26.1 26.1                                                                                   | - -     | - -     | - -     | 64         |  |
| 72                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 21.7 21.7                                                                                    | 22.1 22.1 | 21.9 21.9                                                                                   | - -     | - -     | - -     | 72         |  |
| 80                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 18.3 18.3                                                                                    | 18.7 18.7 | 18.9 18.9                                                                                   | - -     | - -     | - -     | 80         |  |
| 88                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 15.4 15.4                                                                                    | 15.7 15.7 | 16.1 16.1                                                                                   | - -     | - -     | - -     | 88         |  |
| 96                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 13.4 13.4                                                                                    | 13.7 13.6 | 13.7 13.7                                                                                   | - -     | - -     | - -     | 96         |  |
| 104                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 11.5 11.5                                                                                    | 11.7 11.7 | 11.9 11.9                                                                                   | - -     | - -     | - -     | 104        |  |
| 112                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 9.8 9.8                                                                                      | 10.1 10.1 | - -                                                                                         | - -     | - -     | - -     | 112        |  |
| 120                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 8.5 8.5                                                                                      | 8.7 8.7   | - -                                                                                         | - -     | - -     | - -     | 120        |  |
| 128                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 7.3 7.3                                                                                      | - -       | - -                                                                                         | - -     | - -     | - -     | 128        |  |

|   |           |  181.1 ft |           |  196.9 ft |           |           |         |         |         |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------|-----------|-----------|---------|---------|---------|-----|--|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                     | 0,3° 1°   | 0,3° 1°                                                                                       | 0,3° 1°   | 0,3° 1°   | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |  |
| 0°                                                                                                                                                                      |           | 18°                                                                                         | 36°       | 0°                                                                                            | 18°       | 36°       | 0°      | 18°     | 36°     |     |  |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                    |           |                                                                                               |           |           |         |         |         | ft  |  |
| 72                                                                                                                                                                      | 19.7 18.8 | - -                                                                                         | - -       | - -                                                                                           | - -       | - -       | - -     | - -     | - -     | 72  |  |
| 80                                                                                                                                                                      | 16.3 16.3 | 16.6 16.4                                                                                   | 16.7 16.7 | 15.4 15.2                                                                                     | 16.1 15.9 | 16.5 16.5 | - -     | - -     | - -     | 80  |  |
| 88                                                                                                                                                                      | 13.4 13.4 | 14.0 14.0                                                                                   | 14.3 14.3 | 12.5 12.5                                                                                     | 13.2 13.2 | 13.6 13.6 | - -     | - -     | - -     | 88  |  |
| 96                                                                                                                                                                      | 11.0 11.0 | 11.5 11.5                                                                                   | 11.9 11.9 | 10.0 10.0                                                                                     | 10.7 10.7 | 11.1 11.1 | - -     | - -     | - -     | 96  |  |
| 104                                                                                                                                                                     | 8.9 8.9   | 9.5 9.5                                                                                     | 9.7 9.7   | 7.9 7.9                                                                                       | 8.4 8.4   | 8.9 8.9   | - -     | - -     | - -     | 104 |  |
| 112                                                                                                                                                                     | 7.0 7.0   | 7.6 7.6                                                                                     | 7.8 7.8   | 6.1 6.1                                                                                       | 6.5 6.5   | 7.0 7.0   | - -     | - -     | - -     | 112 |  |
| 120                                                                                                                                                                     | 5.6 5.6   | 5.9 5.9                                                                                     | 6.2 6.2   | 4.5 4.5                                                                                       | 5.0 5.0   | 5.4 5.4   | - -     | - -     | - -     | 120 |  |
| 128                                                                                                                                                                     | 4.2 4.2   | 4.5 4.5                                                                                     | 4.7 4.7   | 3.2 3.2                                                                                       | 3.6 3.6   | 3.9 3.9   | - -     | - -     | - -     | 128 |  |
| 136                                                                                                                                                                     | 3.1 3.1   | 3.3 3.3                                                                                     | 3.5 3.5   | - -                                                                                           | - -       | 2.5 2.5   | - -     | - -     | - -     | 136 |  |
| 144                                                                                                                                                                     | - -       | 2.3 2.3                                                                                     | 2.5 2.5   | - -                                                                                           | - -       | - -       | - -     | - -     | - -     | 144 |  |

# HAV-HY

|  99,200 lb +  33,100 lb |           |  36.1 ft |           |  11.5 ft    |           |  32.2 ft/s |     | 360°    |     | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|-----|---------|-----|------------|-----|
|                         |           |  42.3 ft |           |  126.0 ft |           |                                                                                             |     |         |     |            |     |
| 0,3° 1°                                                                                                                                                                                   |           | 0,3° 1°                                                                                   |           | 0,3° 1°                                                                                      |           | 0,3° 1°                                                                                     |     | 0,3° 1° |     | 0,3° 1°    |     |
| 0°                                                                                                                                                                                        |           | 18°                                                                                       |           | 36°                                                                                          |           | 0°                                                                                          |     | 18°     |     | 36°        |     |
| ft                                                                                                                                                                                        |           |                                                                                           |           | 1,000 lb                                                                                     |           |                                                                                             |     |         |     | ft         |     |
| 24                                                                                                                                                                                        | 52.7 45.9 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - - | - -     | - - | - -        | 24  |
| 28                                                                                                                                                                                        | 48.7 42.9 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - - | - -     | - - | - -        | 28  |
| 32                                                                                                                                                                                        | 45.2 40.2 | - -                                                                                       | - -       | - -                                                                                          | - -       | - -                                                                                         | - - | - -     | - - | - -        | 32  |
| 36                                                                                                                                                                                        | 42.1 37.9 | 34.7 32.1                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - - | - -     | - - | - -        | 36  |
| 40                                                                                                                                                                                        | 39.1 35.7 | 32.8 30.7                                                                                 | 25.8 24.6 | - -                                                                                          | - -       | - -                                                                                         | - - | - -     | - - | - -        | 40  |
| 48                                                                                                                                                                                        | 34.5 32.3 | 29.6 28.3                                                                                 | 23.3 23.0 | - -                                                                                          | - -       | - -                                                                                         | - - | - -     | - - | - -        | 48  |
| 56                                                                                                                                                                                        | 31.0 29.5 | 26.5 26.2                                                                                 | 21.7 21.7 | 30.7 30.5                                                                                    | - -       | - -                                                                                         | - - | - -     | - - | - -        | 56  |
| 64                                                                                                                                                                                        | 27.6 26.9 | 24.2 24.2                                                                                 | - -       | 25.6 25.6                                                                                    | 26.1 25.5 | - -                                                                                         | - - | - -     | - - | - -        | 64  |
| 72                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 21.0 21.0                                                                                    | 22.3 21.5 | - -                                                                                         | - - | - -     | - - | - -        | 72  |
| 80                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 18.3 18.3                                                                                    | 18.7 18.3 | 18.9 18.9                                                                                   | - - | - -     | - - | - -        | 80  |
| 88                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 15.9 15.9                                                                                    | 16.3 15.8 | 16.4 16.4                                                                                   | - - | - -     | - - | - -        | 88  |
| 96                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 13.7 13.7                                                                                    | 14.0 13.7 | 14.0 14.0                                                                                   | - - | - -     | - - | - -        | 96  |
| 104                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 11.7 11.7                                                                                    | 12.3 12.3 | 12.3 12.3                                                                                   | - - | - -     | - - | - -        | 104 |
| 112                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 10.3 10.3                                                                                    | 10.7 10.7 | 11.2 11.2                                                                                   | - - | - -     | - - | - -        | 112 |
| 120                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 9.2 9.2                                                                                      | 9.2 9.2   | 9.5 9.5                                                                                     | - - | - -     | - - | - -        | 120 |
| 128                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 7.8 7.8                                                                                      | 7.8 7.8   | 5.6 5.6                                                                                     | - - | - -     | - - | - -        | 128 |
| 136                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 6.6 6.6                                                                                      | 6.9 6.9   | - -                                                                                         | - - | - -     | - - | - -        | 136 |
| 144                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 5.6 5.6                                                                                      | 5.8 5.8   | - -                                                                                         | - - | - -     | - - | - -        | 144 |

|   |           |  181.1 ft |           |  196.9 ft |           |           |     |         |     |         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------|-----------|-----------|-----|---------|-----|---------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                     |           | 0,3° 1°                                                                                       |           | 0,3° 1°   |     | 0,3° 1° |     | 0,3° 1° |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                         |           | 36°                                                                                           |           | 0°        |     | 18°     |     | 36°     |     |
| ft                                                                                                                                                                      |           |                                                                                             |           | 1,000 lb                                                                                      |           |           |     |         |     | ft      |     |
| 80                                                                                                                                                                      | 16.2 15.7 | 17.6 17.4                                                                                   | - -       | 15.6 15.0                                                                                     | - -       | - -       | - - | - -     | - - | - -     | 80  |
| 88                                                                                                                                                                      | 13.8 13.7 | 14.5 14.5                                                                                   | 15.5 15.5 | 12.6 12.5                                                                                     | 14.2 14.0 | - -       | - - | - -     | - - | - -     | 88  |
| 96                                                                                                                                                                      | 11.7 11.7 | 12.4 12.3                                                                                   | 13.1 13.1 | 10.2 10.2                                                                                     | 11.8 11.7 | 12.7 12.6 | - - | - -     | - - | - -     | 96  |
| 104                                                                                                                                                                     | 9.5 9.5   | 10.6 10.6                                                                                   | 11.2 11.2 | 8.2 8.2                                                                                       | 9.5 9.5   | 10.8 10.8 | - - | - -     | - - | - -     | 104 |
| 112                                                                                                                                                                     | 7.8 7.8   | 8.7 8.7                                                                                     | 9.6 9.6   | 6.5 6.5                                                                                       | 7.6 7.6   | 8.7 8.7   | - - | - -     | - - | - -     | 112 |
| 120                                                                                                                                                                     | 6.2 6.2   | 7.1 7.1                                                                                     | 7.8 7.8   | 5.0 5.0                                                                                       | 6.1 6.1   | 6.9 6.9   | - - | - -     | - - | - -     | 120 |
| 128                                                                                                                                                                     | 4.7 4.7   | 5.6 5.6                                                                                     | 6.3 6.3   | 3.7 3.7                                                                                       | 4.7 4.7   | 5.4 5.4   | - - | - -     | - - | - -     | 128 |
| 136                                                                                                                                                                     | 3.5 3.5   | 4.3 4.3                                                                                     | 4.9 4.9   | 2.7 2.7                                                                                       | 3.4 3.4   | 4.0 4.0   | - - | - -     | - - | - -     | 136 |
| 144                                                                                                                                                                     | 2.5 2.5   | 3.1 3.1                                                                                     | 3.6 3.6   | - -                                                                                           | 2.3 2.3   | 2.9 2.9   | - - | - -     | - - | - -     | 144 |

# HAV-HY

|  99,200 lb +  33,100 lb |           |  55.8 ft |           |  11.5 ft |           |  32.2 ft/s  |         | 360°    |         | ASME B30.5 |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------|--|
|                         |           |  42.3 ft |           |                                                                                           |           |  126.0 ft |         |         |         |            |  |
| 0,3° 1°                                                                                                                                                                                   |           | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |  |
| 0°                                                                                                                                                                                        |           | 18°                                                                                       | 36°       | 0°                                                                                        | 18°       | 36°                                                                                          | 0°      | 18°     | 36°     |            |  |
| ft                                                                                                                                                                                        |           | 1,000 lb                                                                                  |           |                                                                                           |           |                                                                                              |         |         |         | ft         |  |
| 32                                                                                                                                                                                        | 32.6 28.5 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 32         |  |
| 36                                                                                                                                                                                        | 30.6 27.0 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 36         |  |
| 40                                                                                                                                                                                        | 28.6 25.6 | - -                                                                                       | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 40         |  |
| 48                                                                                                                                                                                        | 25.5 23.3 | 20.7 19.0                                                                                 | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 48         |  |
| 56                                                                                                                                                                                        | 23.0 21.2 | 18.9 17.5                                                                                 | - -       | 26.0 21.8                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | 56         |  |
| 64                                                                                                                                                                                        | 20.7 19.3 | 17.3 16.3                                                                                 | 13.4 13.4 | 24.5 20.7                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | 64         |  |
| 72                                                                                                                                                                                        | 18.6 17.9 | 15.7 15.2                                                                                 | 12.6 12.6 | 21.0 19.6                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | 72         |  |
| 80                                                                                                                                                                                        | 16.7 16.7 | 14.4 14.4                                                                                 | - -       | 17.9 17.7                                                                                 | 17.7 16.0 | - -                                                                                          | - -     | - -     | - -     | 80         |  |
| 88                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 15.5 15.5                                                                                 | 16.3 15.4 | 13.7 13.0                                                                                    | - -     | - -     | - -     | 88         |  |
| 96                                                                                                                                                                                        | - -       | - -                                                                                       | - -       | 13.2 13.2                                                                                 | 14.4 14.0 | 13.3 12.6                                                                                    | - -     | - -     | - -     | 96         |  |
| 104                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 11.9 11.9                                                                                 | 12.4 12.4 | 12.7 12.4                                                                                    | - -     | - -     | - -     | 104        |  |
| 112                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 10.3 10.3                                                                                 | 10.7 10.7 | 11.4 11.4                                                                                    | - -     | - -     | - -     | 112        |  |
| 120                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 9.4 9.4                                                                                   | 9.6 9.6   | 9.8 9.8                                                                                      | - -     | - -     | - -     | 120        |  |
| 128                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 8.0 8.0                                                                                   | 8.4 8.4   | 8.7 8.7                                                                                      | - -     | - -     | - -     | 128        |  |
| 136                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 6.9 6.9                                                                                   | 7.5 7.5   | 7.8 7.8                                                                                      | - -     | - -     | - -     | 136        |  |
| 144                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 6.0 6.0                                                                                   | 6.4 6.4   | 6.7 6.7                                                                                      | - -     | - -     | - -     | 144        |  |
| 152                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 5.2 5.2                                                                                   | 5.4 5.4   | - -                                                                                          | - -     | - -     | - -     | 152        |  |
| 160                                                                                                                                                                                       | - -       | - -                                                                                       | - -       | 4.4 4.4                                                                                   | 4.8 4.8   | - -                                                                                          | - -     | - -     | - -     | 160        |  |

|   |           |  181.1 ft |           |           |           |  196.9 ft |         |         |         |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------------------------------------------------------------------------------------------|---------|---------|---------|-----|--|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                     | 0,3° 1°   | 0,3° 1°   | 0,3° 1°   | 0,3° 1°                                                                                       | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |  |
| 0°                                                                                                                                                                      |           | 18°                                                                                         | 36°       | 0°        | 18°       | 36°                                                                                           | 0°      | 18°     | 36°     |     |  |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                    |           |           |           |                                                                                               |         |         |         | ft  |  |
| 80                                                                                                                                                                      | 16.3 15.1 | - -                                                                                         | - -       | 14.5 12.3 | - -       | - -                                                                                           | - -     | - -     | - -     | 80  |  |
| 88                                                                                                                                                                      | 13.4 13.2 | 14.4 13.5                                                                                   | - -       | 12.6 12.0 | - -       | - -                                                                                           | - -     | - -     | - -     | 88  |  |
| 96                                                                                                                                                                      | 11.7 11.7 | 13.1 12.7                                                                                   | - -       | 10.4 10.4 | 12.0 11.7 | - -                                                                                           | - -     | - -     | - -     | 96  |  |
| 104                                                                                                                                                                     | 9.7 9.7   | 11.1 11.0                                                                                   | 11.5 11.3 | 8.4 8.4   | 10.4 10.3 | - -                                                                                           | - -     | - -     | - -     | 104 |  |
| 112                                                                                                                                                                     | 8.1 8.1   | 9.4 9.4                                                                                     | 10.7 10.7 | 6.5 6.5   | 8.5 8.5   | 9.8 9.8                                                                                       | - -     | - -     | - -     | 112 |  |
| 120                                                                                                                                                                     | 6.7 6.7   | 8.2 8.2                                                                                     | 8.9 8.9   | 5.2 5.2   | 7.0 7.0   | 8.4 8.4                                                                                       | - -     | - -     | - -     | 120 |  |
| 128                                                                                                                                                                     | 5.4 5.4   | 6.7 6.7                                                                                     | 7.7 7.7   | 4.0 4.0   | 5.6 5.6   | 6.9 6.9                                                                                       | - -     | - -     | - -     | 128 |  |
| 136                                                                                                                                                                     | 4.2 4.2   | 5.5 5.5                                                                                     | 6.5 6.5   | 2.9 2.9   | 4.4 4.4   | 5.6 5.6                                                                                       | - -     | - -     | - -     | 136 |  |
| 144                                                                                                                                                                     | 3.3 3.3   | 4.2 4.2                                                                                     | 5.1 5.1   | - -       | 3.4 3.4   | 4.5 4.5                                                                                       | - -     | - -     | - -     | 144 |  |
| 152                                                                                                                                                                     | - -       | 3.2 3.2                                                                                     | 4.0 4.0   | - -       | - -       | 3.2 3.2                                                                                       | - -     | - -     | - -     | 152 |  |
| 160                                                                                                                                                                     | - -       | - -                                                                                         | 3.0 3.0   | - -       | - -       | - -                                                                                           | - -     | - -     | - -     | 160 |  |



# HAV-HY

|  99,200 lb +  33,100 lb |           |  75.5 ft |         |  11.5 ft    |           |  32.2 ft/s |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |           |  42.3 ft |         |  126.0 ft |           |                                                                                             |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |           | 0,3° 1°                                                                                   | 0,3° 1° | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                     | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |           | 18°                                                                                       | 36°     | 0°                                                                                           | 18°       | 36°                                                                                         | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |           |                                                                                           |         | 1,000 lb                                                                                     |           |                                                                                             |         |         |         | ft         |     |
| 36                                                                                                                                                                                        | 22.2 19.3 | - -                                                                                       | - -     | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 36  |
| 40                                                                                                                                                                                        | 21.0 18.4 | - -                                                                                       | - -     | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 40  |
| 48                                                                                                                                                                                        | 18.9 16.8 | - -                                                                                       | - -     | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 48  |
| 56                                                                                                                                                                                        | 17.2 15.3 | 14.8 13.4                                                                                 | - -     | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 56  |
| 64                                                                                                                                                                                        | 15.5 14.1 | 13.7 12.3                                                                                 | - -     | - -                                                                                          | 16.9 14.9 | - -                                                                                         | - -     | - -     | - -     | - -        | 64  |
| 72                                                                                                                                                                                        | 14.4 13.0 | 12.6 11.5                                                                                 | - -     | - -                                                                                          | 16.1 14.1 | - -                                                                                         | - -     | - -     | - -     | - -        | 72  |
| 80                                                                                                                                                                                        | 13.1 12.2 | 11.3 10.9                                                                                 | 8.7 8.7 | 15.3 13.5                                                                                    | 12.9 11.6 | - -                                                                                         | - -     | - -     | - -     | - -        | 80  |
| 88                                                                                                                                                                                        | 12.2 11.4 | 10.4 10.2                                                                                 | 8.2 8.2 | 14.4 12.8                                                                                    | 12.2 11.1 | - -                                                                                         | - -     | - -     | - -     | - -        | 88  |
| 96                                                                                                                                                                                        | 11.1 10.6 | 9.5 9.5                                                                                   | 7.8 7.8 | 13.1 12.3                                                                                    | 11.6 10.7 | - -                                                                                         | - -     | - -     | - -     | - -        | 96  |
| 104                                                                                                                                                                                       | 10.1 10.0 | 8.9 8.9                                                                                   | - -     | - -                                                                                          | 11.5 11.4 | 11.1 10.2                                                                                   | 8.9 8.6 | - -     | - -     | - -        | 104 |
| 112                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 9.9 9.9   | 10.7 9.9                                                                                    | 8.6 8.4 | - -     | - -     | - -        | 112 |
| 120                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 8.8 8.8   | 9.8 9.3                                                                                     | 8.3 8.1 | - -     | - -     | - -        | 120 |
| 128                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 7.6 7.6   | 8.3 8.3                                                                                     | 8.0 7.9 | - -     | - -     | - -        | 128 |
| 136                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 7.0 7.0   | 7.4 7.4                                                                                     | 7.8 7.7 | - -     | - -     | - -        | 136 |
| 144                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 6.0 6.0   | 6.4 6.4                                                                                     | 6.9 6.9 | - -     | - -     | - -        | 144 |
| 152                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 5.0 5.0   | 5.8 5.6                                                                                     | 6.0 6.0 | - -     | - -     | - -        | 152 |
| 160                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 4.5 4.5   | 4.8 4.8                                                                                     | 5.3 5.3 | - -     | - -     | - -        | 160 |
| 168                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 3.9 3.9   | 4.0 4.0                                                                                     | - -     | - -     | - -     | - -        | 168 |
| 176                                                                                                                                                                                       | - -       | - -                                                                                       | - -     | - -                                                                                          | 3.2 3.2   | 3.6 3.6                                                                                     | - -     | - -     | - -     | - -        | 176 |

|   |           |  181.1 ft |         |  196.9 ft |         |         |         |         |         |     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|-----|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                     | 0,3° 1° | 0,3° 1°                                                                                       | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                         | 36°     | 0°                                                                                            | 18°     | 36°     | 0°      | 18°     | 36°     |     |     |
| ft                                                                                                                                                                      |           |                                                                                             |         | 1,000 lb                                                                                      |         |         |         |         |         | ft  |     |
| 80                                                                                                                                                                      | 12.1 11.0 | - -                                                                                         | - -     | 11.0 8.8                                                                                      | - -     | - -     | - -     | - -     | - -     | - - | 80  |
| 88                                                                                                                                                                      | 11.7 10.7 | - -                                                                                         | - -     | 10.7 8.8                                                                                      | - -     | - -     | - -     | - -     | - -     | - - | 88  |
| 96                                                                                                                                                                      | 10.8 10.2 | - -                                                                                         | - -     | 9.5 8.8                                                                                       | - -     | - -     | - -     | - -     | - -     | - - | 96  |
| 104                                                                                                                                                                     | 9.3 9.2   | 10.0 9.1                                                                                    | - -     | 7.7 7.7                                                                                       | 9.3 8.4 | - -     | - -     | - -     | - -     | - - | 104 |
| 112                                                                                                                                                                     | 7.6 7.6   | 9.2 8.8                                                                                     | 8.4 7.7 | 6.1 6.1                                                                                       | 8.5 8.3 | - -     | - -     | - -     | - -     | - - | 112 |
| 120                                                                                                                                                                     | 6.1 6.1   | 7.9 7.7                                                                                     | 8.1 7.4 | 4.8 4.8                                                                                       | 7.0 7.0 | 7.6 7.2 | - -     | - -     | - -     | - - | 120 |
| 128                                                                                                                                                                     | 4.8 4.8   | 6.8 6.8                                                                                     | 7.7 7.3 | 3.5 3.5                                                                                       | 5.6 5.6 | 7.2 6.9 | - -     | - -     | - -     | - - | 128 |
| 136                                                                                                                                                                     | 3.8 3.8   | 5.6 5.6                                                                                     | 6.7 6.6 | 2.4 2.4                                                                                       | 4.4 4.4 | 6.3 6.2 | - -     | - -     | - -     | - - | 136 |
| 144                                                                                                                                                                     | 2.9 2.9   | 4.5 4.5                                                                                     | 6.0 6.0 | - -                                                                                           | 3.4 3.4 | 4.9 4.9 | - -     | - -     | - -     | - - | 144 |
| 152                                                                                                                                                                     | - -       | 3.6 3.6                                                                                     | 4.9 4.9 | - -                                                                                           | - -     | 3.9 3.9 | - -     | - -     | - -     | - - | 152 |
| 160                                                                                                                                                                     | - -       | 2.7 2.7                                                                                     | 3.9 3.9 | - -                                                                                           | - -     | 3.0 3.0 | - -     | - -     | - -     | - - | 160 |



# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |       |  16.4 ft |      |  11.5 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |       |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |      |      |                                                                                     |
|                                                                                                          |  | 0,3°  | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°    |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            | 36°  |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |       |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            |      |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 119.2 | 105.7                                                                                     | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 113.1 | 101.2                                                                                     | 85.9 | 80.0                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 107.3 | 97.2                                                                                      | 82.9 | 77.5                                                                                      | -        | -                                                                                            | -    | -    | -    | -          | -    | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 102.0 | 93.4                                                                                      | 80.1 | 75.4                                                                                      | 65.7     | 61.8                                                                                         | -    | -    | -    | -          | -    | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 97.4  | 90.0                                                                                      | 77.8 | 73.4                                                                                      | 64.4     | 60.7                                                                                         | -    | -    | -    | -          | -    | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 93.1  | 86.8                                                                                      | 75.5 | 71.4                                                                                      | 63.1     | 59.6                                                                                         | -    | -    | -    | -          | -    | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 85.5  | 81.2                                                                                      | 71.6 | 68.0                                                                                      | 60.2     | 57.9                                                                                         | -    | -    | -    | -          | -    | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 74.2  | 73.0                                                                                      | 67.6 | 65.3                                                                                      | 57.2     | 56.3                                                                                         | 64.0 | 57.2 | -    | -          | -    | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 60.8  | 60.8                                                                                      | 61.3 | 60.9                                                                                      | 54.9     | 54.1                                                                                         | 56.0 | 51.6 | 57.5 | -          | -    | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 51.8  | 51.8                                                                                      | 52.9 | 52.9                                                                                      | 50.4     | 49.9                                                                                         | 49.6 | 45.8 | 50.1 | 46.9       | 48.9 | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 43.9  | 43.9                                                                                      | 44.7 | 44.7                                                                                      | -        | -                                                                                            | 43.0 | 40.5 | 43.2 | 41.9       | 44.5 | 42.4 | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 33.4 | 33.3 | 33.8 | 33.5       | 34.6 | 34.4 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 26.8 | 26.8 | 27.2 | 27.2       | 27.5 | 27.5 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 22.0 | 21.9 | 22.3 | 22.2       | 22.8 | 22.8 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 17.9 | 17.9 | 18.6 | 18.6       | 19.0 | 19.0 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 15.0 | 15.0 | 15.5 | 15.5       | 15.7 | 15.7 | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 12.5 | 12.5 | 12.9 | 12.9       | 13.2 | 13.2 | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 10.5 | 10.5 | 10.8 | 10.8       | 11.0 | 11.0 | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 8.8  | 8.8  | 9.0  | 9.0        | 9.2  | 9.2  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.2  | 7.2  | 7.4  | 7.4        | -    | -    | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.9  | 5.9  | 6.1  | 6.1        | -    | -    | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -     | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 4.8  | 4.8  | -    | -          | -    | -    | 128                                                                                 |

|                                                                                     |                                                                                     |      |  181.1 ft |      |          |      |  196.9 ft |      |      |      |      |      |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|------|----|---------------------------------------------------------------------------------------|--|
|  |  |      | 0,3°                                                                                         | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3° | 1° |  |  |
|                                                                                     | 0°                                                                                  |      | 18°                                                                                          |      | 36°      |      | 0°                                                                                             |      | 18°  |      | 36°  |      |      |    |                                                                                       |  |
| ft                                                                                  |                                                                                     |      |                                                                                              |      | 1,000 lb |      |                                                                                                |      |      |      |      |      | ft   |    |                                                                                       |  |
| 48                                                                                  | 30.4                                                                                | 26.8 | -                                                                                            | -    | -        | -    | -                                                                                              | -    | 23.6 | -    | -    | -    | -    | 48 |                                                                                       |  |
| 56                                                                                  | 24.5                                                                                | 22.7 | 24.5                                                                                         | 23.2 | 25.7     | 23.8 | 22.5                                                                                           | 20.6 | 23.6 | -    | -    | -    | -    | 56 |                                                                                       |  |
| 64                                                                                  | 19.7                                                                                | 18.6 | 20.4                                                                                         | 19.5 | 20.8     | 20.2 | 17.8                                                                                           | 16.8 | 18.9 | 17.7 | 19.8 | 18.6 | 64   |    |                                                                                       |  |
| 72                                                                                  | 15.5                                                                                | 15.3 | 16.4                                                                                         | 16.0 | 16.8     | 16.6 | 14.2                                                                                           | 13.5 | 15.1 | 14.4 | 16.0 | 15.1 | 72   |    |                                                                                       |  |
| 80                                                                                  | 12.6                                                                                | 12.4 | 13.2                                                                                         | 13.2 | 13.7     | 13.7 | 11.3                                                                                           | 10.9 | 12.1 | 11.7 | 12.8 | 12.4 | 80   |    |                                                                                       |  |
| 88                                                                                  | 10.0                                                                                | 10.0 | 10.6                                                                                         | 10.6 | 11.1     | 11.1 | 8.7                                                                                            | 8.5  | 9.3  | 9.3  | 10.0 | 9.9  | 88   |    |                                                                                       |  |
| 96                                                                                  | 7.7                                                                                 | 7.7  | 8.4                                                                                          | 8.4  | 8.8      | 8.8  | 6.5                                                                                            | 6.5  | 7.2  | 7.2  | 7.7  | 7.7  | 96   |    |                                                                                       |  |
| 104                                                                                 | 5.7                                                                                 | 5.7  | 6.4                                                                                          | 6.4  | 6.7      | 6.7  | 4.8                                                                                            | 4.8  | 5.3  | 5.3  | 5.7  | 5.7  | 104  |    |                                                                                       |  |
| 112                                                                                 | 4.1                                                                                 | 4.1  | 4.8                                                                                          | 4.8  | 5.0      | 5.0  | -                                                                                              | -    | 3.7  | 3.7  | 4.1  | 4.1  | 112  |    |                                                                                       |  |
| 120                                                                                 | -                                                                                   | -    | 3.2                                                                                          | 3.2  | 3.5      | 3.5  | -                                                                                              | -    | -    | -    | -    | -    | 120  |    |                                                                                       |  |



# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |  |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |  |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft                                                                                  |  |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |  |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |  |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |  |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |  |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |  |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |  |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |  |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |  |
| 32                                                                                                                                                                                        |                                                                                   | 45.2                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 46.1 | 39.7 | -          | -    | 32                                                                                  |  |
| 36                                                                                                                                                                                        |                                                                                   | 42.1                                                                                      | 37.9 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 44.1 | 38.6 | -          | -    | 36                                                                                  |  |
| 40                                                                                                                                                                                        |                                                                                   | 39.1                                                                                      | 35.7 | 32.8                                                                                      | 30.7 | 25.8                                                                                         | 24.6 | 42.0 | 37.1 | 35.3       | -    | 40                                                                                  |  |
| 48                                                                                                                                                                                        |                                                                                   | 34.2                                                                                      | 32.3 | 29.6                                                                                      | 28.3 | 23.3                                                                                         | 23.0 | 33.6 | 31.9 | 32.7       | 28.8 | 48                                                                                  |  |
| 56                                                                                                                                                                                        |                                                                                   | 28.8                                                                                      | 28.4 | 26.5                                                                                      | 26.2 | 21.7                                                                                         | 21.7 | 26.7 | 26.7 | 28.3       | 26.5 | 56                                                                                  |  |
| 64                                                                                                                                                                                        |                                                                                   | 23.6                                                                                      | 23.6 | 23.7                                                                                      | 23.7 | -                                                                                            | -    | 22.1 | 22.1 | 22.9       | 22.6 | 64                                                                                  |  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 18.4 | 18.4 | 19.0       | 19.0 | 72                                                                                  |  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 15.7 | 15.7 | 15.8       | 15.8 | 80                                                                                  |  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 13.2 | 13.2 | 13.7       | 13.7 | 88                                                                                  |  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 11.2 | 11.2 | 11.8       | 11.8 | 96                                                                                  |  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 9.5  | 9.5  | 10.1       | 10.1 | 104                                                                                 |  |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 7.9  | 7.9  | 8.5        | 8.5  | 112                                                                                 |  |
| 120                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.5  | 6.5  | 7.0        | 7.0  | 120                                                                                 |  |
| 128                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 5.3  | 5.3  | 5.7        | 5.7  | 128                                                                                 |  |
| 136                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.4  | 4.4  | 4.7        | 4.7  | 136                                                                                 |  |
| 144                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.4  | 3.4  | 3.6        | 3.6  | 144                                                                                 |  |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      | ft   |      |                                                                                       |  |
| 56                                                                                  |                                                                                     | 23.3                                                                                         | 20.4 | -    | -    | -    | -    | 20.5                                                                                           | 16.8 | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 19.6                                                                                         | 18.0 | 19.1 | -    | -    | -    | 18.0                                                                                           | 16.1 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 16.0                                                                                         | 15.1 | 17.2 | 16.8 | -    | -    | 14.2                                                                                           | 13.3 | 16.2 | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 12.8                                                                                         | 12.4 | 14.5 | 13.9 | 15.2 | 15.1 | 11.0                                                                                           | 10.9 | 13.0 | 12.4 | 14.7 | 13.9 | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 10.2                                                                                         | 10.1 | 11.8 | 11.6 | 12.9 | 12.7 | 8.5                                                                                            | 8.5  | 10.2 | 10.1 | 11.8 | 11.4 | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 8.1                                                                                          | 8.1  | 9.5  | 9.5  | 10.6 | 10.6 | 6.5                                                                                            | 6.5  | 7.9  | 7.9  | 9.3  | 9.2  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 6.4                                                                                          | 6.4  | 7.5  | 7.5  | 8.6  | 8.6  | 4.8                                                                                            | 4.8  | 6.2  | 6.2  | 7.3  | 7.3  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 4.8                                                                                          | 4.8  | 5.9  | 5.9  | 6.7  | 6.7  | 3.2                                                                                            | 3.2  | 4.6  | 4.6  | 5.6  | 5.6  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 3.5                                                                                          | 3.5  | 4.5  | 4.5  | 5.1  | 5.1  | -                                                                                              | -    | 3.2  | 3.2  | 4.1  | 4.1  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | -                                                                                            | -    | 3.2  | 3.2  | 3.7  | 3.7  | -                                                                                              | -    | -    | -    | 2.9  | 2.9  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 2.5  | 2.5  | -                                                                                              | -    | -    | -    | -    | -    | 136                                                                                   |  |

# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |  55.8 ft |      |  11.5 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |           |                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-----------|-------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |           |                                                                                     |     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°        |  |     |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |           |                                                                                     | 36° |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |           | ft                                                                                  |     |
| 14                                                                                                                                                                                        | 44.5                                                                              | 37.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 14                                                                                  |     |
| 16                                                                                                                                                                                        | 43.0                                                                              | 36.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 16                                                                                  |     |
| 18                                                                                                                                                                                        | 41.6                                                                              | 35.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 18                                                                                  |     |
| 20                                                                                                                                                                                        | 40.1                                                                              | 34.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 20                                                                                  |     |
| 24                                                                                                                                                                                        | 37.4                                                                              | 32.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 24                                                                                  |     |
| 28                                                                                                                                                                                        | 34.9                                                                              | 30.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 28                                                                                  |     |
| 32                                                                                                                                                                                        | 32.6                                                                              | 28.5                                                                                      | 25.5 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -         | 32                                                                                  |     |
| 36                                                                                                                                                                                        | 30.6                                                                              | 27.0                                                                                      | 24.1 | 21.8                                                                                      | -    | -                                                                                            | 30.0 | 24.8 | -    | -          | -         | 36                                                                                  |     |
| 40                                                                                                                                                                                        | 28.6                                                                              | 25.6                                                                                      | 22.8 | 20.8                                                                                      | -    | -                                                                                            | 29.2 | 24.1 | -    | -          | -         | 40                                                                                  |     |
| 48                                                                                                                                                                                        | 25.5                                                                              | 23.3                                                                                      | 20.7 | 19.0                                                                                      | 16.3 | 15.8                                                                                         | 27.6 | 22.9 | -    | -          | -         | 48                                                                                  |     |
| 56                                                                                                                                                                                        | 23.0                                                                              | 21.2                                                                                      | 18.9 | 17.5                                                                                      | 14.6 | 14.6                                                                                         | 25.0 | 21.8 | 20.6 | 18.4       | -         | 56                                                                                  |     |
| 64                                                                                                                                                                                        | 20.7                                                                              | 19.3                                                                                      | 17.3 | 16.3                                                                                      | 13.4 | 13.4                                                                                         | 21.7 | 20.5 | 19.4 | 17.6       | -         | 64                                                                                  |     |
| 72                                                                                                                                                                                        | 18.6                                                                              | 17.9                                                                                      | 15.7 | 15.2                                                                                      | 12.6 | 12.6                                                                                         | 18.4 | 18.1 | 18.5 | 16.8       | 15.0 13.9 | 72                                                                                  |     |
| 80                                                                                                                                                                                        | 16.7                                                                              | 16.7                                                                                      | 14.4 | 14.4                                                                                      | -    | -                                                                                            | 15.5 | 15.5 | 16.5 | 15.8       | 14.4 13.4 | 80                                                                                  |     |
| 88                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 13.4 | 13.4 | 14.1 | 14.0       | 13.7 13.0 | 88                                                                                  |     |
| 96                                                                                                                                                                                        | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.4 | 11.4 | 12.1 | 12.1       | 12.6 12.5 | 96                                                                                  |     |
| 104                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 9.9  | 9.9  | 10.7 | 10.7       | 11.2 11.2 | 104                                                                                 |     |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 8.5  | 8.5  | 9.2  | 9.2        | 9.6 9.6   | 112                                                                                 |     |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.2  | 7.2  | 8.1  | 8.1        | 8.5 8.5   | 120                                                                                 |     |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.9  | 5.9  | 6.8  | 6.8        | 7.4 7.4   | 128                                                                                 |     |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.9  | 4.9  | 5.6  | 5.6        | 6.0 6.0   | 136                                                                                 |     |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.0  | 4.0  | 4.7  | 4.7        | 4.9 4.9   | 144                                                                                 |     |
| 152                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.2  | 3.2  | 3.6  | 3.6        | -         | 152                                                                                 |     |
| 160                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.8  | 2.8        | -         | 160                                                                                 |     |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      |      |      | ft                                                                                    |  |
| 56                                                                                  |                                                                                     | 18.6                                                                                         | 15.7 | -    | -    | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 18.0                                                                                         | 15.7 | -    | -    | -    | -    | 15.7                                                                                           | 12.3 | -    | -    | -    | -    | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 15.7                                                                                         | 14.8 | -    | -    | -    | -    | 13.9                                                                                           | 12.3 | -    | -    | -    | -    | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 12.6                                                                                         | 12.4 | 14.5 | 13.8 | -    | -    | 10.9                                                                                           | 10.9 | 13.7 | -    | -    | -    | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 10.1                                                                                         | 10.1 | 12.3 | 12.3 | 12.6 | 12.0 | 8.5                                                                                            | 8.5  | 11.1 | 11.0 | -    | -    | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 8.1                                                                                          | 8.1  | 10.1 | 10.1 | 11.4 | 11.1 | 6.5                                                                                            | 6.5  | 8.8  | 8.8  | 10.6 | 10.5 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 6.4                                                                                          | 6.4  | 8.2  | 8.2  | 9.9  | 9.9  | 4.8                                                                                            | 4.8  | 6.8  | 6.8  | 8.8  | 8.8  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | 5.0                                                                                          | 5.0  | 6.5  | 6.5  | 8.3  | 8.3  | 3.5                                                                                            | 3.5  | 5.2  | 5.2  | 7.0  | 7.0  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | 3.7                                                                                          | 3.7  | 5.2  | 5.2  | 6.7  | 6.7  | -                                                                                              | -    | 3.9  | 3.9  | 5.4  | 5.4  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | 2.6                                                                                          | 2.6  | 4.0  | 4.0  | 5.3  | 5.3  | -                                                                                              | -    | 2.9  | 2.9  | 4.2  | 4.2  | 128                                                                                   |  |
| 136                                                                                 |                                                                                     | -                                                                                            | -    | 2.9  | 2.9  | 4.0  | 4.0  | -                                                                                              | -    | -    | -    | 3.1  | 3.1  | 136                                                                                   |  |
| 144                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 2.9  | 2.9  | -                                                                                              | -    | -    | -    | -    | -    | 144                                                                                   |  |



# HAV-HY

|  77,200 lb +  33,100 lb |                                                                                   |      |  75.5 ft |      |  11.5 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-----|
|                                                                                                                                                                                           |                                                                                   |      |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |      |     |
|                                                                                                          |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°  |
|                                                                                                                                                                                           |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            | 36°  |     |
| ft                                                                                                                                                                                        |                                                                                   |      |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft   |     |
| 18                                                                                                                                                                                        |                                                                                   | 27.7 | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 18  |
| 20                                                                                                                                                                                        |                                                                                   | 27.0 | 23.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 20  |
| 24                                                                                                                                                                                        |                                                                                   | 25.9 | 22.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 24  |
| 28                                                                                                                                                                                        |                                                                                   | 24.5 | 21.1                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 28  |
| 32                                                                                                                                                                                        |                                                                                   | 23.4 | 20.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 32  |
| 36                                                                                                                                                                                        |                                                                                   | 22.2 | 19.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | -    | 36  |
| 40                                                                                                                                                                                        |                                                                                   | 21.0 | 18.4                                                                                      | 17.9 | -                                                                                         | -        | -                                                                                            | 19.5 | 17.1 | -    | -          | -    | 40  |
| 48                                                                                                                                                                                        |                                                                                   | 18.9 | 16.8                                                                                      | 16.2 | 14.6                                                                                      | -        | -                                                                                            | 18.5 | 16.3 | -    | -          | -    | 48  |
| 56                                                                                                                                                                                        |                                                                                   | 17.2 | 15.3                                                                                      | 14.8 | 13.4                                                                                      | -        | -                                                                                            | 17.7 | 15.5 | -    | -          | -    | 56  |
| 64                                                                                                                                                                                        |                                                                                   | 15.5 | 14.1                                                                                      | 13.7 | 12.3                                                                                      | 10.4     | 10.3                                                                                         | 16.9 | 14.9 | 14.3 | -          | -    | 64  |
| 72                                                                                                                                                                                        |                                                                                   | 14.4 | 13.0                                                                                      | 12.6 | 11.5                                                                                      | 9.5      | 9.5                                                                                          | 16.1 | 14.1 | 13.5 | 12.1       | -    | 72  |
| 80                                                                                                                                                                                        |                                                                                   | 13.1 | 12.2                                                                                      | 11.3 | 10.9                                                                                      | 8.7      | 8.7                                                                                          | 14.9 | 13.4 | 12.9 | 11.6       | 10.1 | 9.4 |
| 88                                                                                                                                                                                        |                                                                                   | 12.2 | 11.4                                                                                      | 10.4 | 10.2                                                                                      | 8.2      | 8.2                                                                                          | 13.2 | 12.5 | 12.2 | 11.1       | 9.7  | 9.2 |
| 96                                                                                                                                                                                        |                                                                                   | 11.1 | 10.6                                                                                      | 9.5  | 9.5                                                                                       | 7.8      | 7.8                                                                                          | 11.2 | 11.2 | 11.6 | 10.7       | 9.2  | 8.9 |
| 104                                                                                                                                                                                       |                                                                                   | 10.1 | 10.0                                                                                      | 8.9  | 8.9                                                                                       | -        | -                                                                                            | 9.9  | 9.9  | 10.7 | 10.2       | 8.9  | 8.6 |
| 112                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 8.5  | 8.5  | 9.2  | 9.2        | 8.6  | 8.4 |
| 120                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.4  | 7.4  | 8.0  | 8.0        | 8.2  | 8.1 |
| 128                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 6.2  | 6.2  | 6.9  | 6.9        | 7.6  | 7.5 |
| 136                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.1  | 5.1  | 6.1  | 6.1        | 6.6  | 6.6 |
| 144                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 4.0  | 4.0  | 5.1  | 5.1        | 5.8  | 5.8 |
| 152                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.2  | 3.2  | 4.1  | 4.1        | 4.7  | 4.7 |
| 160                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 2.6  | 2.6  | 3.3  | 3.3        | 3.7  | 3.7 |

|   |      |  181.1 ft |      |     |     |          |      |  196.9 ft |     |      |     |     |   |  |      |  |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|-----|-----|----------|------|------------------------------------------------------------------------------------------------|-----|------|-----|-----|---|---------------------------------------------------------------------------------------|------|--|----|--|
|                                                                                                                                                                         |      | 0,3°                                                                                         |      | 1°  |     | 0,3°     |      | 1°                                                                                             |     | 0,3° |     | 1°  |   |                                                                                       | 0,3° |  | 1° |  |
|                                                                                                                                                                         |      | 0°                                                                                           |      | 18° |     | 36°      |      | 0°                                                                                             |     | 18°  |     | 36° |   |                                                                                       |      |  |    |  |
| ft                                                                                                                                                                      |      |                                                                                              |      |     |     | 1,000 lb |      |                                                                                                |     |      |     |     |   | ft                                                                                    |      |  |    |  |
| 64                                                                                                                                                                      | 12.8 | 11.0                                                                                         | -    | -   | -   | -        | -    | -                                                                                              | -   | -    | -   | -   | - | -                                                                                     | 64   |  |    |  |
| 72                                                                                                                                                                      | 12.4 | 11.0                                                                                         | -    | -   | -   | -        | 11.2 | 8.8                                                                                            | -   | -    | -   | -   | - | -                                                                                     | 72   |  |    |  |
| 80                                                                                                                                                                      | 11.6 | 10.7                                                                                         | -    | -   | -   | -        | 10.0 | 8.7                                                                                            | -   | -    | -   | -   | - | -                                                                                     | 80   |  |    |  |
| 88                                                                                                                                                                      | 9.4  | 9.4                                                                                          | 10.5 | 9.6 | -   | -        | 7.7  | 7.7                                                                                            | -   | -    | -   | -   | - | -                                                                                     | 88   |  |    |  |
| 96                                                                                                                                                                      | 7.4  | 7.4                                                                                          | 9.8  | 9.3 | -   | -        | 5.9  | 5.9                                                                                            | 8.7 | 8.4  | -   | -   | - | -                                                                                     | 96   |  |    |  |
| 104                                                                                                                                                                     | 5.7  | 5.7                                                                                          | 8.4  | 8.3 | 8.6 | -        | 4.2  | 4.2                                                                                            | 6.8 | 6.8  | -   | -   | - | -                                                                                     | 104  |  |    |  |
| 112                                                                                                                                                                     | 4.3  | 4.3                                                                                          | 6.7  | 6.7 | 8.3 | 7.7      | -    | -                                                                                              | 5.4 | 5.4  | 7.6 | 7.2 | - | -                                                                                     | 112  |  |    |  |
| 120                                                                                                                                                                     | 3.3  | 3.3                                                                                          | 5.3  | 5.3 | 7.2 | 7.2      | -    | -                                                                                              | 3.9 | 3.9  | 6.1 | 6.1 | - | -                                                                                     | 120  |  |    |  |
| 128                                                                                                                                                                     | -    | -                                                                                            | 4.1  | 4.1 | 5.8 | 5.8      | -    | -                                                                                              | 2.9 | 2.9  | 4.7 | 4.7 | - | -                                                                                     | 128  |  |    |  |
| 136                                                                                                                                                                     | -    | -                                                                                            | 3.0  | 3.0 | 4.7 | 4.7      | -    | -                                                                                              | -   | -    | 3.5 | 3.5 | - | -                                                                                     | 136  |  |    |  |
| 144                                                                                                                                                                     | -    | -                                                                                            | -    | -   | 3.6 | 3.6      | -    | -                                                                                              | -   | -    | 2.5 | 2.5 | - | -                                                                                     | 144  |  |    |  |



# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |          |  16.4 ft    |      |  11.5 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5 |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|  42.3 ft                                                                                                 |                                                                                   |          |  126.0 ft |      |                                                                                           |      |                                                                                             |      |      |      |            |                                                                                     |
|                                                                                                          |  | 0,3°     | 1°                                                                                           | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                          | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                           |                                                                                   | 0°       |                                                                                              | 18°  |                                                                                           | 36°  |                                                                                             | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb |                                                                                              |      |                                                                                           |      |                                                                                             |      |      |      |            | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 119.2    | 105.7                                                                                        | 89.2 | -                                                                                         | -    | -                                                                                           | -    | -    | -    | -          | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 113.1    | 101.2                                                                                        | 85.9 | 80.0                                                                                      | -    | -                                                                                           | -    | -    | -    | -          | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 107.3    | 97.2                                                                                         | 82.9 | 77.5                                                                                      | -    | -                                                                                           | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 102.0    | 93.4                                                                                         | 80.1 | 75.4                                                                                      | 65.7 | 61.8                                                                                        | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 97.4     | 90.0                                                                                         | 77.8 | 73.4                                                                                      | 64.4 | 60.7                                                                                        | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 92.7     | 86.8                                                                                         | 75.5 | 71.4                                                                                      | 63.1 | 59.6                                                                                        | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 78.0     | 77.7                                                                                         | 71.6 | 68.0                                                                                      | 60.2 | 57.9                                                                                        | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 61.6     | 61.6                                                                                         | 63.3 | 61.9                                                                                      | 57.2 | 56.3                                                                                        | 54.0 | 49.5 | -    | -          | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 50.1     | 50.1                                                                                         | 51.5 | 51.5                                                                                      | 51.9 | 51.7                                                                                        | 47.6 | 44.0 | 48.4 | 43.6       | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 42.4     | 42.4                                                                                         | 43.5 | 43.5                                                                                      | 44.4 | 44.4                                                                                        | 41.6 | 39.2 | 42.1 | 39.6       | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 35.6     | 35.6                                                                                         | 36.5 | 36.5                                                                                      | -    | -                                                                                           | 36.5 | 35.1 | 37.1 | 35.8       | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 28.0 | 28.0 | 29.0 | 29.0       | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 21.8 | 21.8 | 22.6 | 22.6       | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 17.3 | 17.3 | 17.8 | 17.8       | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 13.7 | 13.7 | 14.4 | 14.4       | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 11.3 | 11.3 | 11.7 | 11.7       | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 9.1  | 9.1  | 9.5  | 9.5        | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 7.2  | 7.2  | 7.6  | 7.6        | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 5.5  | 5.5  | 5.9  | 5.9        | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 4.1  | 4.1  | 4.6  | 4.6        | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 3.1  | 3.1  | 3.3  | 3.3        | 120                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |      |      |  196.9 ft |      |      |      |      |      |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3° | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3° | 1°   |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°  |      | 0°                                                                                             |      | 18°  |      | 36°  |      |                                                                                       |  |
| ft                                                                                  |                                                                                     | 1,000 lb                                                                                     |      |      |      |      |      |                                                                                                |      |      |      |      |      | ft                                                                                    |  |
| 48                                                                                  |                                                                                     | 23.2                                                                                         | 21.2 | -    | -    | -    | -    | -                                                                                              | -    | -    | -    | -    | -    | 48                                                                                    |  |
| 56                                                                                  |                                                                                     | 18.1                                                                                         | 16.9 | 19.2 | 17.9 | 20.1 | 18.8 | 16.0                                                                                           | 15.1 | 17.2 | -    | -    | -    | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 14.0                                                                                         | 13.4 | 15.1 | 14.3 | 15.8 | 15.0 | 12.2                                                                                           | 11.7 | 13.3 | 12.6 | 14.0 | 13.5 | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 10.9                                                                                         | 10.4 | 11.8 | 11.3 | 12.4 | 12.0 | 9.1                                                                                            | 8.9  | 10.0 | 9.8  | 10.7 | 10.4 | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 8.2                                                                                          | 8.0  | 8.9  | 8.9  | 9.5  | 9.4  | 6.5                                                                                            | 6.5  | 7.4  | 7.4  | 8.0  | 8.0  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 6.0                                                                                          | 6.0  | 6.6  | 6.6  | 7.2  | 7.2  | 4.4                                                                                            | 4.4  | 5.2  | 5.2  | 5.8  | 5.8  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 4.2                                                                                          | 4.2  | 4.8  | 4.8  | 5.2  | 5.2  | -                                                                                              | -    | 3.4  | 3.4  | 3.9  | 3.9  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 2.6                                                                                          | 2.6  | 3.1  | 3.1  | 3.5  | 3.5  | -                                                                                              | -    | -    | -    | -    | -    | 104                                                                                   |  |

# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |          |  36.1 ft    |      |  11.5 ft |      |  32.2 ft/s |      | 360° |      | ASME B30.5                                                                          |      |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|------|------|------|-------------------------------------------------------------------------------------|------|------|-----|
|  42.3 ft                                                                                                 |                                                                                   |          |  126.0 ft |      |                                                                                           |      |                                                                                             |      |      |      |                                                                                     |      |      |     |
|                                                                                                          |  | 0,3°     | 1°                                                                                           | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                          | 0,3° | 1°   | 0,3° | 1°                                                                                  | 0,3° | 1°   |     |
|                                                                                                                                                                                           |                                                                                   | 0°       | 18°                                                                                          | 36°  | 0°                                                                                        | 18°  | 36°                                                                                         | 0°   | 18°  | 36°  |  |      |      |     |
| ft                                                                                                                                                                                        |                                                                                   | 1,000 lb |                                                                                              |      |                                                                                           |      |                                                                                             |      |      |      |                                                                                     | ft   |      |     |
| 10                                                                                                                                                                                        |                                                                                   | 72.7     | 59.8                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -    | -    | -                                                                                   | -    | -    | 10  |
| 12                                                                                                                                                                                        |                                                                                   | 69.1     | 57.4                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -    | -    | -                                                                                   | -    | -    | 12  |
| 14                                                                                                                                                                                        |                                                                                   | 65.8     | 55.3                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -    | -    | -                                                                                   | -    | -    | 14  |
| 16                                                                                                                                                                                        |                                                                                   | 62.8     | 53.1                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -    | -    | -                                                                                   | -    | -    | 16  |
| 18                                                                                                                                                                                        |                                                                                   | 60.0     | 51.2                                                                                         | -    | -                                                                                         | -    | -                                                                                           | -    | -    | -    | -                                                                                   | -    | -    | 18  |
| 20                                                                                                                                                                                        |                                                                                   | 57.4     | 49.3                                                                                         | 44.3 | -                                                                                         | -    | -                                                                                           | -    | -    | -    | -                                                                                   | -    | -    | 20  |
| 24                                                                                                                                                                                        |                                                                                   | 52.7     | 45.9                                                                                         | 41.2 | 37.6                                                                                      | -    | -                                                                                           | -    | -    | -    | -                                                                                   | -    | -    | 24  |
| 28                                                                                                                                                                                        |                                                                                   | 48.7     | 42.9                                                                                         | 38.7 | 35.4                                                                                      | -    | -                                                                                           | -    | -    | -    | -                                                                                   | -    | -    | 28  |
| 32                                                                                                                                                                                        |                                                                                   | 45.2     | 40.2                                                                                         | 36.6 | 33.6                                                                                      | 28.2 | 26.3                                                                                        | 44.6 | 39.0 | -    | -                                                                                   | -    | -    | 32  |
| 36                                                                                                                                                                                        |                                                                                   | 42.0     | 37.9                                                                                         | 34.7 | 32.1                                                                                      | 27.0 | 25.4                                                                                        | 39.9 | 35.5 | -    | -                                                                                   | -    | -    | 36  |
| 40                                                                                                                                                                                        |                                                                                   | 38.5     | 35.5                                                                                         | 32.8 | 30.7                                                                                      | 25.8 | 24.6                                                                                        | 35.9 | 33.4 | 35.0 | -                                                                                   | -    | -    | 40  |
| 48                                                                                                                                                                                        |                                                                                   | 29.5     | 29.5                                                                                         | 29.2 | 28.2                                                                                      | 23.3 | 23.0                                                                                        | 28.4 | 27.6 | 29.4 | 27.5                                                                                | -    | -    | 48  |
| 56                                                                                                                                                                                        |                                                                                   | 23.2     | 23.2                                                                                         | 24.2 | 24.2                                                                                      | 21.7 | 21.7                                                                                        | 22.6 | 22.4 | 23.3 | 23.1                                                                                | 23.5 | 22.6 | 56  |
| 64                                                                                                                                                                                        |                                                                                   | 18.8     | 18.8                                                                                         | 19.4 | 19.4                                                                                      | -    | -                                                                                           | 18.0 | 18.0 | 19.1 | 19.1                                                                                | 19.5 | 19.5 | 64  |
| 72                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 14.6 | 14.6 | 15.7 | 15.7                                                                                | 16.6 | 16.6 | 72  |
| 80                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 12.0 | 12.0 | 12.8 | 12.8                                                                                | 13.7 | 13.7 | 80  |
| 88                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 9.7  | 9.7  | 10.6 | 10.6                                                                                | 11.4 | 11.4 | 88  |
| 96                                                                                                                                                                                        |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 8.0  | 8.0  | 8.7  | 8.7                                                                                 | 9.4  | 9.4  | 96  |
| 104                                                                                                                                                                                       |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 6.4  | 6.4  | 7.0  | 7.0                                                                                 | 7.7  | 7.7  | 104 |
| 112                                                                                                                                                                                       |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 5.0  | 5.0  | 5.7  | 5.7                                                                                 | 6.1  | 6.1  | 112 |
| 120                                                                                                                                                                                       |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 3.7  | 3.7  | 4.3  | 4.3                                                                                 | 4.6  | 4.6  | 120 |
| 128                                                                                                                                                                                       |                                                                                   | -        | -                                                                                            | -    | -                                                                                         | -    | -                                                                                           | 2.8  | 2.8  | 3.2  | 3.2                                                                                 | -    | -    | 128 |

|   |           |  181.1 ft |           |           |         |  196.9 ft |         |         |         |  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|-----------|---------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------------------------------------------------------------------------------------|-----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°   | 0,3° 1° | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° |                                                                                       |     |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°        | 18°     | 36°                                                                                            | 0°      | 18°     | 36°     |                                                                                       |     |
| ft                                                                                                                                                                      |           | 1,000 lb                                                                                     |           |           |         |                                                                                                |         |         |         | ft                                                                                    |     |
| 56                                                                                                                                                                      | 18.2 16.6 | - -                                                                                          | - -       | 16.2 14.8 | - -     | - -                                                                                            | - -     | - -     | - -     | 56                                                                                    | 56  |
| 64                                                                                                                                                                      | 14.0 13.2 | 16.2 -                                                                                       | - -       | 12.2 11.6 | - -     | - -                                                                                            | - -     | - -     | - -     | 64                                                                                    | 64  |
| 72                                                                                                                                                                      | 10.7 10.4 | 12.6 12.2                                                                                    | - -       | 8.9 8.9   | 11.1 -  | - -                                                                                            | - -     | - -     | - -     | 72                                                                                    | 72  |
| 80                                                                                                                                                                      | 8.0 8.0   | 9.8 9.8                                                                                      | 11.5 11.1 | 6.5 6.5   | 8.3 8.3 | 10.0 9.8                                                                                       | - -     | - -     | - -     | 80                                                                                    | 80  |
| 88                                                                                                                                                                      | 6.0 6.0   | 7.4 7.4                                                                                      | 8.9 8.8   | 4.4 4.4   | 6.1 6.1 | 7.7 7.5                                                                                        | - -     | - -     | - -     | 88                                                                                    | 88  |
| 96                                                                                                                                                                      | 4.2 4.2   | 5.6 5.6                                                                                      | 6.7 6.7   | 2.7 2.7   | 4.2 4.2 | 5.5 5.5                                                                                        | - -     | - -     | - -     | 96                                                                                    | 96  |
| 104                                                                                                                                                                     | 2.8 2.8   | 3.9 3.9                                                                                      | 5.0 5.0   | - -       | 2.6 2.6 | 3.7 3.7                                                                                        | - -     | - -     | - -     | 104                                                                                   | 104 |
| 112                                                                                                                                                                     | - -       | - -                                                                                          | 3.7 3.7   | - -       | - -     | - -                                                                                            | - -     | - -     | - -     | 112                                                                                   | 112 |

# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |      |  55.8 ft |      |  11.5 ft |          |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |      |  42.3 ft |      |                                                                                           |          |  126.0 ft |      |      |      |            |                                                                                     |
|                                                                                                          |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                           |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°      |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |      |                                                                                           |      |                                                                                           | 1,000 lb |                                                                                              |      |      |      |            | ft                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 44.5 | 37.4                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 43.0 | 36.4                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 41.6 | 35.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 40.1 | 34.2                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 37.4 | 32.1                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 34.9 | 30.3                                                                                      | -    | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 32.6 | 28.5                                                                                      | 25.5 | -                                                                                         | -        | -                                                                                            | -    | -    | -    | -          | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 30.6 | 27.0                                                                                      | 24.1 | 21.8                                                                                      | -        | -                                                                                            | 30.0 | 24.8 | -    | -          | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 28.6 | 25.6                                                                                      | 22.8 | 20.8                                                                                      | -        | -                                                                                            | 29.1 | 24.1 | -    | -          | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 25.5 | 23.3                                                                                      | 20.7 | 19.0                                                                                      | 16.3     | 15.8                                                                                         | 25.8 | 22.6 | -    | -          | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 23.0 | 21.2                                                                                      | 18.9 | 17.5                                                                                      | 14.6     | 14.6                                                                                         | 22.0 | 20.6 | 20.6 | 18.4       | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 20.1 | 19.3                                                                                      | 17.3 | 16.3                                                                                      | 13.4     | 13.4                                                                                         | 18.5 | 18.3 | 18.8 | 17.4       | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | 16.8 | 16.8                                                                                      | 15.7 | 15.2                                                                                      | 12.6     | 12.6                                                                                         | 15.3 | 15.3 | 16.2 | 16.1       | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | 14.2 | 14.2                                                                                      | 14.3 | 14.3                                                                                      | -        | -                                                                                            | 12.6 | 12.6 | 13.8 | 13.8       | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 10.4 | 10.4 | 11.8 | 11.8       | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 8.6  | 8.6  | 9.8  | 9.8        | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 7.0  | 7.0  | 8.1  | 8.1        | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 5.7  | 5.7  | 6.8  | 6.8        | 112                                                                                 |
| 120                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 4.4  | 4.4  | 5.4  | 5.4        | 120                                                                                 |
| 128                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 3.4  | 3.4  | 4.2  | 4.2        | 128                                                                                 |
| 136                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | 2.4  | 2.4  | 3.3  | 3.3        | 136                                                                                 |
| 144                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -        | -                                                                                            | -    | -    | 2.3  | 2.3        | 144                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |      |          |      |  196.9 ft |      |      |     |      |     |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|------|----------|------|------------------------------------------------------------------------------------------------|------|------|-----|------|-----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°     | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°  | 0,3° | 1°  |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |      | 36°      |      | 0°                                                                                             |      | 18°  |     | 36°  |     |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |      | 1,000 lb |      |                                                                                                |      |      |     | ft   |     |                                                                                       |  |
| 56                                                                                  |                                                                                     | 17.0                                                                                         | 15.1 | -    | -    | -        | -    | -                                                                                              | -    | -    | -   | -    | -   | 56                                                                                    |  |
| 64                                                                                  |                                                                                     | 13.8                                                                                         | 13.2 | -    | -    | -        | -    | 12.0                                                                                           | 11.2 | -    | -   | -    | -   | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 10.4                                                                                         | 10.4 | -    | -    | -        | -    | 8.7                                                                                            | 8.7  | -    | -   | -    | -   | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 8.0                                                                                          | 8.0  | 10.6 | 10.5 | -        | -    | 6.3                                                                                            | 6.3  | 9.1  | -   | -    | -   | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 6.0                                                                                          | 6.0  | 8.3  | 8.3  | 10.4     | 10.3 | 4.3                                                                                            | 4.3  | 6.9  | 6.9 | -    | -   | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 4.2                                                                                          | 4.2  | 6.3  | 6.3  | 8.3      | 8.3  | 2.7                                                                                            | 2.7  | 5.0  | 5.0 | 7.2  | 7.2 | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | 2.8                                                                                          | 2.8  | 4.8  | 4.8  | 6.4      | 6.4  | -                                                                                              | -    | 3.5  | 3.5 | 5.3  | 5.3 | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5  | 5.0      | 5.0  | -                                                                                              | -    | -    | -   | 3.7  | 3.7 | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | -                                                                                            | -    | -    | -    | 3.7      | 3.7  | -                                                                                              | -    | -    | -   | -    | -   | 120                                                                                   |  |

# HAV-HY

|  55,100 lb +  33,100 lb |                                                                                   |  75.5 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |    |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|----|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |    |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   | 0,3° | 1° |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      | 36°  |    |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft   |    |                                                                                     |
| 18                                                                                                                                                                                        | 27.7                                                                              | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | -  | 18                                                                                  |
| 20                                                                                                                                                                                        | 27.0                                                                              | 23.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | -  | 20                                                                                  |
| 24                                                                                                                                                                                        | 25.9                                                                              | 22.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | -  | 24                                                                                  |
| 28                                                                                                                                                                                        | 24.5                                                                              | 21.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | -  | 28                                                                                  |
| 32                                                                                                                                                                                        | 23.4                                                                              | 20.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | -  | 32                                                                                  |
| 36                                                                                                                                                                                        | 22.2                                                                              | 19.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | -  | 36                                                                                  |
| 40                                                                                                                                                                                        | 21.0                                                                              | 18.4                                                                                      | 17.9 | -                                                                                         | -    | -                                                                                            | 19.5 | 17.1 | -    | -          | -    | -    | -  | 40                                                                                  |
| 48                                                                                                                                                                                        | 18.9                                                                              | 16.8                                                                                      | 16.2 | 14.6                                                                                      | -    | -                                                                                            | 18.5 | 16.3 | -    | -          | -    | -    | -  | 48                                                                                  |
| 56                                                                                                                                                                                        | 17.2                                                                              | 15.3                                                                                      | 14.8 | 13.4                                                                                      | -    | -                                                                                            | 17.7 | 15.5 | -    | -          | -    | -    | -  | 56                                                                                  |
| 64                                                                                                                                                                                        | 15.5                                                                              | 14.1                                                                                      | 13.7 | 12.3                                                                                      | 10.4 | 10.3                                                                                         | 16.4 | 14.7 | 14.3 | -          | -    | -    | -  | 64                                                                                  |
| 72                                                                                                                                                                                        | 14.4                                                                              | 13.0                                                                                      | 12.6 | 11.5                                                                                      | 9.5  | 9.5                                                                                          | 14.8 | 13.7 | 13.5 | 12.1       | -    | -    | -  | 72                                                                                  |
| 80                                                                                                                                                                                        | 13.1                                                                              | 12.2                                                                                      | 11.3 | 10.9                                                                                      | 8.7  | 8.7                                                                                          | 12.6 | 12.4 | 12.7 | 11.6       | 10.1 | 9.4  | -  | 80                                                                                  |
| 88                                                                                                                                                                                        | 12.2                                                                              | 11.4                                                                                      | 10.4 | 10.2                                                                                      | 8.2  | 8.2                                                                                          | 10.4 | 10.4 | 11.6 | 10.8       | 9.7  | 9.2  | -  | 88                                                                                  |
| 96                                                                                                                                                                                        | 10.9                                                                              | 10.6                                                                                      | 9.5  | 9.5                                                                                       | 7.8  | 7.8                                                                                          | 8.5  | 8.5  | 10.2 | 10.1       | 9.2  | 8.9  | -  | 96                                                                                  |
| 104                                                                                                                                                                                       | 9.4                                                                               | 9.4                                                                                       | 8.9  | 8.9                                                                                       | -    | -                                                                                            | 7.0  | 7.0  | 8.8  | 8.8        | 8.9  | 8.4  | -  | 104                                                                                 |
| 112                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.7  | 5.7  | 7.2  | 7.2        | 8.1  | 8.1  | -  | 112                                                                                 |
| 120                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.6  | 4.6  | 5.9  | 5.9        | 7.0  | 7.0  | -  | 120                                                                                 |
| 128                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.5  | 3.5  | 4.8  | 4.8        | 5.8  | 5.8  | -  | 128                                                                                 |
| 136                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.6  | 2.6  | 3.8  | 3.8        | 4.7  | 4.7  | -  | 136                                                                                 |
| 144                                                                                                                                                                                       | -                                                                                 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 2.7  | 2.7        | 3.6  | 3.6  | -  | 144                                                                                 |

|                                                                                     |                                                                                     |  181.1 ft |      |      |     |          |     |  196.9 ft |     |      |    |      |    |                                                                                       |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|----------|-----|------------------------------------------------------------------------------------------------|-----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3°     | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                     |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°      |     | 0°                                                                                             |     | 18°  |    | 36°  |    |                                                                                       |  |
| ft                                                                                  |                                                                                     |                                                                                              |      |      |     | 1,000 lb |     |                                                                                                |     |      |    |      |    | ft                                                                                    |  |
| 64                                                                                  |                                                                                     | 12.1                                                                                         | 11.0 | -    | -   | -        | -   | -                                                                                              | -   | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                  |                                                                                     | 9.5                                                                                          | 9.5  | -    | -   | -        | -   | 7.8                                                                                            | 7.7 | -    | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                  |                                                                                     | 7.2                                                                                          | 7.2  | -    | -   | -        | -   | 5.4                                                                                            | 5.4 | -    | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                  |                                                                                     | 5.2                                                                                          | 5.2  | 8.3  | 8.3 | -        | -   | 3.6                                                                                            | 3.6 | -    | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                  |                                                                                     | 3.6                                                                                          | 3.6  | 6.3  | 6.3 | -        | -   | -                                                                                              | -   | -    | -  | -    | -  | 96                                                                                    |  |
| 104                                                                                 |                                                                                     | -                                                                                            | -    | 4.8  | 4.8 | 7.3      | -   | -                                                                                              | -   | -    | -  | -    | -  | 104                                                                                   |  |
| 112                                                                                 |                                                                                     | -                                                                                            | -    | 3.5  | 3.5 | 5.6      | 5.6 | -                                                                                              | -   | -    | -  | -    | -  | 112                                                                                   |  |
| 120                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 4.2      | 4.2 | -                                                                                              | -   | -    | -  | -    | -  | 120                                                                                   |  |
| 128                                                                                 |                                                                                     | -                                                                                            | -    | -    | -   | 3.1      | 3.1 | -                                                                                              | -   | -    | -  | -    | -  | 128                                                                                   |  |

# HAV-HY

|  33,100 lb +  33,100 lb |             |  16.4 ft |           |  11.5 ft    |           |  32.2 ft/s |         | 360°    |         | ASME B30.5 |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|---------|---------|---------|------------|-----|
|                         |             |  42.3 ft |           |  126.0 ft |           |                                                                                             |         |         |         |            |     |
| 0,3° 1°                                                                                                                                                                                   |             | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                     | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |     |
| 0°                                                                                                                                                                                        |             | 18°                                                                                       | 36°       | 0°                                                                                           | 18°       | 36°                                                                                         | 0°      | 18°     | 36°     |            |     |
| ft                                                                                                                                                                                        |             |                                                                                           |           | 1,000 lb                                                                                     |           |                                                                                             |         |         |         | ft         |     |
| 10                                                                                                                                                                                        | 119.2 105.7 | 89.2 -                                                                                    | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 10  |
| 12                                                                                                                                                                                        | 113.1 101.2 | 85.9 80.0                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 12  |
| 14                                                                                                                                                                                        | 107.3 97.2  | 82.9 77.5                                                                                 | - -       | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 14  |
| 16                                                                                                                                                                                        | 102.0 93.4  | 80.1 75.4                                                                                 | 65.7 61.8 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 16  |
| 18                                                                                                                                                                                        | 93.5 88.4   | 77.8 73.4                                                                                 | 64.4 60.7 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 18  |
| 20                                                                                                                                                                                        | 83.7 82.3   | 75.2 71.4                                                                                 | 63.1 59.6 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 20  |
| 24                                                                                                                                                                                        | 62.8 62.8   | 65.1 64.8                                                                                 | 60.0 57.9 | - -                                                                                          | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 24  |
| 28                                                                                                                                                                                        | 49.1 49.1   | 50.9 50.9                                                                                 | 52.5 52.2 | 45.3 40.4                                                                                    | - -       | - -                                                                                         | - -     | - -     | - -     | - -        | 28  |
| 32                                                                                                                                                                                        | 39.6 39.6   | 41.0 41.0                                                                                 | 42.2 42.2 | 38.9 35.0                                                                                    | 40.5 33.7 | - -                                                                                         | - -     | - -     | - -     | - -        | 32  |
| 36                                                                                                                                                                                        | 33.2 33.2   | 34.3 34.3                                                                                 | 35.2 35.2 | 33.8 30.7                                                                                    | 35.3 32.2 | 35.5 31.0                                                                                   | - -     | - -     | - -     | - -        | 36  |
| 40                                                                                                                                                                                        | 27.6 27.6   | 28.4 28.4                                                                                 | - -       | 29.1 26.9                                                                                    | 30.2 28.2 | 31.3 29.3                                                                                   | - -     | - -     | - -     | - -        | 40  |
| 48                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 21.6 21.0                                                                                    | 22.5 22.0 | 23.3 23.0                                                                                   | - -     | - -     | - -     | - -        | 48  |
| 56                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 16.4 16.4                                                                                    | 17.2 17.2 | 17.7 17.7                                                                                   | - -     | - -     | - -     | - -        | 56  |
| 64                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 12.6 12.6                                                                                    | 13.3 13.3 | 13.7 13.7                                                                                   | - -     | - -     | - -     | - -        | 64  |
| 72                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 9.8 9.8                                                                                      | 10.2 10.2 | 10.6 10.6                                                                                   | - -     | - -     | - -     | - -        | 72  |
| 80                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 7.4 7.4                                                                                      | 7.8 7.8   | 8.3 8.3                                                                                     | - -     | - -     | - -     | - -        | 80  |
| 88                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 5.4 5.4                                                                                      | 5.8 5.8   | 6.2 6.2                                                                                     | - -     | - -     | - -     | - -        | 88  |
| 96                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 3.8 3.8                                                                                      | 4.2 4.2   | 4.5 4.5                                                                                     | - -     | - -     | - -     | - -        | 96  |
| 104                                                                                                                                                                                       | - -         | - -                                                                                       | - -       | 2.4 2.4                                                                                      | 2.8 2.8   | 2.8 2.8                                                                                     | - -     | - -     | - -     | - -        | 104 |

|   |           |  181.1 ft |           |  196.9 ft |         |         |         |         |         |     |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|-----|----|
| 0,3° 1°                                                                                                                                                                 |           | 0,3° 1°                                                                                      | 0,3° 1°   | 0,3° 1°                                                                                        | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1° |     |    |
| 0°                                                                                                                                                                      |           | 18°                                                                                          | 36°       | 0°                                                                                             | 18°     | 36°     | 0°      | 18°     | 36°     |     |    |
| ft                                                                                                                                                                      |           |                                                                                              |           | 1,000 lb                                                                                       |         |         |         |         |         | ft  |    |
| 48                                                                                                                                                                      | 16.0 14.8 | - -                                                                                          | - -       | - -                                                                                            | - -     | - -     | - -     | - -     | - -     | - - | 48 |
| 56                                                                                                                                                                      | 11.8 11.2 | 12.9 12.1                                                                                    | 13.9 13.0 | 9.8 9.4                                                                                        | 10.9 -  | - -     | - -     | - -     | - -     | - - | 56 |
| 64                                                                                                                                                                      | 8.4 8.3   | 9.5 9.1                                                                                      | 10.2 9.9  | 6.6 6.5                                                                                        | 7.7 7.6 | 8.6 8.3 | - -     | - -     | - -     | - - | 64 |
| 72                                                                                                                                                                      | 5.8 5.8   | 6.7 6.7                                                                                      | 7.3 7.3   | 4.0 4.0                                                                                        | 4.9 4.9 | 5.8 5.8 | - -     | - -     | - -     | - - | 72 |
| 80                                                                                                                                                                      | 3.7 3.7   | 4.3 4.3                                                                                      | 5.0 5.0   | - -                                                                                            | - -     | - -     | - -     | - -     | - -     | - - | 80 |



# HAV-HY

|  33,100 lb +  33,100 lb |                                                                                   |  36.1 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |                                                                                     |
|                                                                                                          |  | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |
|                                                                                                                                                                                           |                                                                                   | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |                                                                                           |      |                                                                                           |      | 1,000 lb                                                                                     |      |      |      |            |      | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 72.7                                                                                      | 59.8 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 69.1                                                                                      | 57.4 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 65.8                                                                                      | 55.3 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 62.8                                                                                      | 53.1 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 60.0                                                                                      | 51.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 57.4                                                                                      | 49.3 | 44.3                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | -    | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 52.7                                                                                      | 45.9 | 41.2                                                                                      | 37.6 | -                                                                                            | -    | -    | -    | -          | -    | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 48.7                                                                                      | 42.9 | 38.7                                                                                      | 35.4 | -                                                                                            | -    | -    | -    | -          | -    | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 42.6                                                                                      | 40.2 | 36.6                                                                                      | 33.6 | 28.2                                                                                         | 26.3 | 37.2 | 30.9 | -          | -    | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 36.2                                                                                      | 35.5 | 34.7                                                                                      | 32.1 | 27.0                                                                                         | 25.4 | 33.3 | 29.7 | -          | -    | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 30.5                                                                                      | 30.5 | 32.4                                                                                      | 30.4 | 25.8                                                                                         | 24.6 | 29.0 | 26.2 | 28.1       | -    | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 22.9                                                                                      | 22.9 | 24.4                                                                                      | 24.4 | 23.3                                                                                         | 23.0 | 22.5 | 20.6 | 23.8       | 22.9 | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 17.7                                                                                      | 17.7 | 18.8                                                                                      | 18.8 | 19.7                                                                                         | 19.7 | 17.2 | 16.5 | 18.8       | 18.4 | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 14.1                                                                                      | 14.1 | 14.6                                                                                      | 14.6 | -                                                                                            | -    | 13.3 | 13.2 | 14.6       | 14.6 | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 10.4 | 10.4 | 11.5       | 11.5 | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 8.3  | 8.3  | 9.2        | 9.2  | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 6.2  | 6.2  | 7.3        | 7.3  | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 4.6  | 4.6  | 5.4        | 5.4  | 96                                                                                  |
| 104                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | 3.3  | 3.3  | 3.9        | 3.9  | 104                                                                                 |
| 112                                                                                                                                                                                       |                                                                                   | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | 112                                                                                 |

|                                                                                        |                                                                                     |  181.1 ft |      |      |     |      |     |  196.9 ft |     |      |    |      |    |                                                                                       |  |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|------|-----|------|-----|------------------------------------------------------------------------------------------------|-----|------|----|------|----|---------------------------------------------------------------------------------------|--|
|  ft |  | 0,3°                                                                                         | 1°   | 0,3° | 1°  | 0,3° | 1°  | 0,3°                                                                                           | 1°  | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                        |                                                                                     | 0°                                                                                           |      | 18°  |     | 36°  |     | 0°                                                                                             |     | 18°  |    | 36°  |    |                                                                                       |  |
| 1,000 lb                                                                               |                                                                                     |                                                                                              |      |      |     |      |     |                                                                                                |     |      |    |      |    | ft                                                                                    |  |
| 56                                                                                     |                                                                                     | 11.8                                                                                         | 10.9 | -    | -   | -    | -   | 9.9                                                                                            | 9.3 | -    | -  | -    | -  | 56                                                                                    |  |
| 64                                                                                     |                                                                                     | 8.4                                                                                          | 8.2  | 10.6 | -   | -    | -   | 6.6                                                                                            | 6.5 | -    | -  | -    | -  | 64                                                                                    |  |
| 72                                                                                     |                                                                                     | 5.6                                                                                          | 5.6  | 7.6  | 7.5 | -    | -   | 4.0                                                                                            | 4.0 | 6.0  | -  | -    | -  | 72                                                                                    |  |
| 80                                                                                     |                                                                                     | 3.5                                                                                          | 3.5  | 5.2  | 5.2 | 6.9  | 6.8 | -                                                                                              | -   | 3.9  | -  | -    | -  | 80                                                                                    |  |
| 88                                                                                     |                                                                                     | -                                                                                            | -    | 3.4  | 3.4 | 4.9  | 4.9 | -                                                                                              | -   | -    | -  | -    | -  | 88                                                                                    |  |
| 96                                                                                     |                                                                                     | -                                                                                            | -    | -    | -   | 3.1  | 3.1 | -                                                                                              | -   | -    | -  | -    | -  | 96                                                                                    |  |

# HAV-HY

|  33,100 lb +  33,100 lb |                                                                                   |      |  55.8 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|------|-----|
|                                                                                                                                                                                           |                                                                                   |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |      |     |
|                                                                                                          |  | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         | 0,3° | 1°   |     |
|                                                                                                                                                                                           |                                                                                   | 0°   |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            | 36°  |      |     |
| ft                                                                                                                                                                                        |                                                                                   |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      | ft   |     |
| 14                                                                                                                                                                                        |                                                                                   | 44.5 | 37.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 14  |
| 16                                                                                                                                                                                        |                                                                                   | 43.0 | 36.4                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 16  |
| 18                                                                                                                                                                                        |                                                                                   | 41.6 | 35.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 18  |
| 20                                                                                                                                                                                        |                                                                                   | 40.1 | 34.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 20  |
| 24                                                                                                                                                                                        |                                                                                   | 37.4 | 32.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 24  |
| 28                                                                                                                                                                                        |                                                                                   | 34.9 | 30.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 28  |
| 32                                                                                                                                                                                        |                                                                                   | 32.6 | 28.5                                                                                      | 25.5 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -    | 32  |
| 36                                                                                                                                                                                        |                                                                                   | 30.6 | 27.0                                                                                      | 24.1 | 21.8                                                                                      | -    | -                                                                                            | 27.9 | 23.8 | -    | -          | -    | -    | 36  |
| 40                                                                                                                                                                                        |                                                                                   | 28.6 | 25.6                                                                                      | 22.8 | 20.8                                                                                      | -    | -                                                                                            | 26.3 | 23.2 | -    | -          | -    | -    | 40  |
| 48                                                                                                                                                                                        |                                                                                   | 24.5 | 23.0                                                                                      | 20.7 | 19.0                                                                                      | 16.3 | 15.8                                                                                         | 22.7 | 20.3 | -    | -          | -    | -    | 48  |
| 56                                                                                                                                                                                        |                                                                                   | 19.3 | 19.3                                                                                      | 18.9 | 17.5                                                                                      | 14.6 | 14.6                                                                                         | 17.8 | 16.3 | 19.0 | 17.6       | -    | -    | 56  |
| 64                                                                                                                                                                                        |                                                                                   | 15.5 | 15.5                                                                                      | 16.6 | 16.3                                                                                      | 13.4 | 13.4                                                                                         | 13.9 | 13.3 | 16.0 | 15.5       | -    | -    | 64  |
| 72                                                                                                                                                                                        |                                                                                   | 12.6 | 12.6                                                                                      | 13.5 | 13.5                                                                                      | 12.6 | 12.6                                                                                         | 10.9 | 10.9 | 12.9 | 12.8       | 13.7 | 13.7 | 72  |
| 80                                                                                                                                                                                        |                                                                                   | 10.5 | 10.5                                                                                      | 11.1 | 11.1                                                                                      | -    | -                                                                                            | 8.5  | 8.5  | 10.5 | 10.5       | 11.7 | 11.7 | 80  |
| 88                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 6.7  | 6.7  | 8.4  | 8.4        | 9.5  | 9.5  | 88  |
| 96                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 5.3  | 5.3  | 6.7  | 6.7        | 7.8  | 7.8  | 96  |
| 104                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 3.9  | 3.9  | 5.2  | 5.2        | 6.2  | 6.2  | 104 |
| 112                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 3.9  | 3.9        | 4.8  | 4.8  | 112 |
| 120                                                                                                                                                                                       |                                                                                   | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 3.5  | 3.5  | 120 |

|                                                                                     |                                                                                     |      |  181.1 ft |      |          |      |    |      |  196.9 ft |      |    |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|----------|------|----|------|------------------------------------------------------------------------------------------------|------|----|---------------------------------------------------------------------------------------|
|  |  | 0,3° | 1°                                                                                           | 0,3° | 1°       | 0,3° | 1° | 0,3° | 1°                                                                                             | 0,3° | 1° |  |
|                                                                                     |                                                                                     | 0°   |                                                                                              | 18°  |          | 36°  |    | 0°   |                                                                                                | 18°  |    |                                                                                       |
| ft                                                                                  |                                                                                     |      |                                                                                              |      | 1,000 lb |      |    |      |                                                                                                |      | ft |                                                                                       |
| 56                                                                                  | 11.5                                                                                | 10.8 | -                                                                                            | -    | -        | -    | -  | -    | -                                                                                              | -    | -  | 56                                                                                    |
| 64                                                                                  | 8.1                                                                                 | 8.0  | -                                                                                            | -    | -        | -    | -  | -    | -                                                                                              | -    | -  | 64                                                                                    |
| 72                                                                                  | 5.6                                                                                 | 5.6  | -                                                                                            | -    | -        | -    | -  | -    | -                                                                                              | -    | -  | 72                                                                                    |
| 80                                                                                  | 3.5                                                                                 | 3.5  | 6.1                                                                                          | 5.4  | -        | -    | -  | -    | -                                                                                              | -    | -  | 80                                                                                    |
| 88                                                                                  | -                                                                                   | -    | 4.2                                                                                          | 3.6  | 6.4      | 6.4  | -  | -    | -                                                                                              | -    | -  | 88                                                                                    |
| 96                                                                                  | -                                                                                   | -    | -                                                                                            | -    | 4.5      | 4.5  | -  | -    | -                                                                                              | -    | -  | 96                                                                                    |
| 104                                                                                 | -                                                                                   | -    | -                                                                                            | -    | 3.0      | 3.0  | -  | -    | -                                                                                              | -    | -  | 104                                                                                   |





# HAV-HY

|  33,100 lb +  33,100 lb |      |  75.5 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                     |     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|------|-------------------------------------------------------------------------------------|-----|--|
|                         |      |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |      |  |     |  |
|                                                                                                                                                                                           |      | 0,3°                                                                                      | 1°   | 0,3°                                                                                      | 1°   | 0,3°                                                                                         | 1°   | 0,3° | 1°   | 0,3°       | 1°   |                                                                                     |     |  |
|                                                                                                                                                                                           |      | 0°                                                                                        |      | 18°                                                                                       |      | 36°                                                                                          |      | 0°   |      | 18°        |      |                                                                                     | 36° |  |
| ft                                                                                                                                                                                        |      | 1,000 lb                                                                                  |      |                                                                                           |      |                                                                                              |      |      |      |            |      |                                                                                     | ft  |  |
| 18                                                                                                                                                                                        | 27.7 | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 18  |  |
| 20                                                                                                                                                                                        | 27.0 | 23.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 20  |  |
| 24                                                                                                                                                                                        | 25.9 | 22.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 24  |  |
| 28                                                                                                                                                                                        | 24.5 | 21.1                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 28  |  |
| 32                                                                                                                                                                                        | 23.4 | 20.2                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 32  |  |
| 36                                                                                                                                                                                        | 22.2 | 19.3                                                                                      | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | -    | -                                                                                   | 36  |  |
| 40                                                                                                                                                                                        | 21.0 | 18.4                                                                                      | 17.9 | -                                                                                         | -    | -                                                                                            | 19.5 | 17.1 | -    | -          | -    | -                                                                                   | 40  |  |
| 48                                                                                                                                                                                        | 18.9 | 16.8                                                                                      | 16.2 | 14.6                                                                                      | -    | -                                                                                            | 18.0 | 16.0 | -    | -          | -    | -                                                                                   | 48  |  |
| 56                                                                                                                                                                                        | 17.2 | 15.3                                                                                      | 14.8 | 13.4                                                                                      | -    | -                                                                                            | 15.8 | 14.6 | -    | -          | -    | -                                                                                   | 56  |  |
| 64                                                                                                                                                                                        | 15.5 | 14.1                                                                                      | 13.7 | 12.3                                                                                      | 10.4 | 10.3                                                                                         | 13.1 | 12.8 | 13.8 | -          | -    | -                                                                                   | 64  |  |
| 72                                                                                                                                                                                        | 13.3 | 13.0                                                                                      | 12.6 | 11.5                                                                                      | 9.5  | 9.5                                                                                          | 10.2 | 10.2 | 12.8 | 11.9       | -    | -                                                                                   | 72  |  |
| 80                                                                                                                                                                                        | 11.2 | 11.2                                                                                      | 11.3 | 10.9                                                                                      | 8.7  | 8.7                                                                                          | 8.1  | 8.1  | 10.7 | 10.7       | 10.1 | 9.4                                                                                 | 80  |  |
| 88                                                                                                                                                                                        | 9.4  | 9.4                                                                                       | 10.2 | 9.9                                                                                       | 8.2  | 8.2                                                                                          | 6.3  | 6.3  | 8.6  | 8.6        | 9.5  | 9.0                                                                                 | 88  |  |
| 96                                                                                                                                                                                        | 7.9  | 7.9                                                                                       | 8.6  | 8.6                                                                                       | 7.8  | 7.8                                                                                          | 4.8  | 4.8  | 6.9  | 6.9        | 8.6  | 8.4                                                                                 | 96  |  |
| 104                                                                                                                                                                                       | 6.7  | 6.7                                                                                       | 7.0  | 7.0                                                                                       | -    | -                                                                                            | 3.5  | 3.5  | 5.5  | 5.5        | 7.2  | 7.2                                                                                 | 104 |  |
| 112                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 4.1  | 4.1        | 5.7  | 5.7                                                                                 | 112 |  |
| 120                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | 3.1  | 3.1        | 4.5  | 4.5                                                                                 | 120 |  |
| 128                                                                                                                                                                                       | -    | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 3.3  | 3.3                                                                                 | 128 |  |

|                                                                                   |                                                                                   |  181.1 ft |     |      |    |          |    |  196.9 ft |    |      |    |      |    |                                                                                     |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----|------|----|----------|----|---------------------------------------------------------------------------------------------|----|------|----|------|----|-------------------------------------------------------------------------------------|--|
|  |  | 0,3°                                                                                       | 1°  | 0,3° | 1° | 0,3°     | 1° | 0,3°                                                                                        | 1° | 0,3° | 1° | 0,3° | 1° |  |  |
|                                                                                   |                                                                                   | 0°                                                                                         |     | 18°  |    | 36°      |    | 0°                                                                                          |    | 18°  |    | 36°  |    |                                                                                     |  |
| ft                                                                                |                                                                                   |                                                                                            |     |      |    | 1,000 lb |    |                                                                                             |    |      |    | ft   |    |                                                                                     |  |
| 64                                                                                |                                                                                   | 7.0                                                                                        | 7.0 | -    | -  | -        | -  | -                                                                                           | -  | -    | -  | -    | -  | 64                                                                                  |  |
| 72                                                                                |                                                                                   | 4.7                                                                                        | 4.7 | -    | -  | -        | -  | -                                                                                           | -  | -    | -  | -    | -  | 72                                                                                  |  |

# HAV-HY

|  11,000 lb +  33,100 lb |             |  16.4 ft |           |  11.5 ft |           |  32.2 ft/s  |         | 360°    |         | ASME B30.5 |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------|---------|---------|---------|------------|--|
|                         |             |  42.3 ft |           |                                                                                           |           |  126.0 ft |         |         |         |            |  |
| 0,3° 1°                                                                                                                                                                                   |             | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                   | 0,3° 1°   | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° |            |  |
| 0°                                                                                                                                                                                        |             | 18°                                                                                       | 36°       | 0°                                                                                        | 18°       | 36°                                                                                          | 0°      | 18°     | 36°     |            |  |
| ft                                                                                                                                                                                        |             | 1,000 lb                                                                                  |           |                                                                                           |           |                                                                                              |         |         |         | ft         |  |
| 10                                                                                                                                                                                        | 119.2 105.7 | 89.2 -                                                                                    | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 10         |  |
| 12                                                                                                                                                                                        | 113.1 101.2 | 85.9 80.0                                                                                 | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 12         |  |
| 14                                                                                                                                                                                        | 104.3 93.8  | 82.9 77.5                                                                                 | - -       | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 14         |  |
| 16                                                                                                                                                                                        | 90.5 81.6   | 80.1 75.4                                                                                 | 65.7 61.8 | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 16         |  |
| 18                                                                                                                                                                                        | 76.9 71.6   | 74.4 71.2                                                                                 | 64.4 60.7 | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 18         |  |
| 20                                                                                                                                                                                        | 64.3 62.5   | 67.5 65.9                                                                                 | 62.5 59.3 | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 20         |  |
| 24                                                                                                                                                                                        | 47.5 47.5   | 49.8 49.8                                                                                 | 51.9 51.9 | - -                                                                                       | - -       | - -                                                                                          | - -     | - -     | - -     | 24         |  |
| 28                                                                                                                                                                                        | 36.7 36.7   | 38.4 38.4                                                                                 | 40.0 40.0 | 33.5 29.4                                                                                 | - -       | - -                                                                                          | - -     | - -     | - -     | 28         |  |
| 32                                                                                                                                                                                        | 29.1 29.1   | 30.5 30.5                                                                                 | 31.7 31.7 | 28.1 25.1                                                                                 | 29.9 24.0 | - -                                                                                          | - -     | - -     | - -     | 32         |  |
| 36                                                                                                                                                                                        | 24.0 24.0   | 25.1 25.1                                                                                 | 26.0 26.0 | 24.0 21.7                                                                                 | 25.7 23.1 | 27.0 21.9                                                                                    | - -     | - -     | - -     | 36         |  |
| 40                                                                                                                                                                                        | 19.6 19.6   | 20.4 20.4                                                                                 | - -       | 20.3 18.6                                                                                 | 21.8 19.9 | 22.9 21.0                                                                                    | - -     | - -     | - -     | 40         |  |
| 48                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 14.9 13.9                                                                                 | 15.9 15.0 | 16.8 15.9                                                                                    | - -     | - -     | - -     | 48         |  |
| 56                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 10.8 10.4                                                                                 | 11.7 11.2 | 12.2 11.9                                                                                    | - -     | - -     | - -     | 56         |  |
| 64                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 7.7 7.6                                                                                   | 8.5 8.3   | 9.0 8.9                                                                                      | - -     | - -     | - -     | 64         |  |
| 72                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | 5.1 5.1                                                                                   | 5.8 5.8   | 6.2 6.2                                                                                      | - -     | - -     | - -     | 72         |  |
| 80                                                                                                                                                                                        | - -         | - -                                                                                       | - -       | - -                                                                                       | 3.7 3.7   | 4.1 4.1                                                                                      | - -     | - -     | - -     | 80         |  |

|   |         |  181.1 ft |         |         |         |  196.9 ft |         |         |         |    |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------|---------|---------|---------|----------------------------------------------------------------------------------------------|---------|---------|---------|----|--|
| 0,3° 1°                                                                                                                                                               |         | 0,3° 1°                                                                                    | 0,3° 1° | 0,3° 1° | 0,3° 1° | 0,3° 1°                                                                                      | 0,3° 1° | 0,3° 1° | 0,3° 1° |    |  |
| 0°                                                                                                                                                                    |         | 18°                                                                                        | 36°     | 0°      | 18°     | 36°                                                                                          | 0°      | 18°     | 36°     |    |  |
| ft                                                                                                                                                                    |         | 1,000 lb                                                                                   |         |         |         |                                                                                              |         |         |         | ft |  |
| 48                                                                                                                                                                    | 8.7 8.3 | - -                                                                                        | - -     | - -     | - -     | - -                                                                                          | - -     | - -     | - -     | 48 |  |
| 56                                                                                                                                                                    | 5.3 5.3 | - -                                                                                        | - -     | - -     | - -     | - -                                                                                          | - -     | - -     | - -     | 56 |  |
| 64                                                                                                                                                                    | 2.7 2.7 | - -                                                                                        | - -     | - -     | - -     | - -                                                                                          | - -     | - -     | - -     | 64 |  |

# HAV-HY

|  11,000 lb +  33,100 lb |                                                                                   |      |  36.1 ft |      |      |  11.5 ft |      |          |  32.2 ft/s  |      |      | 360° |      | ASME B30.5 |    |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------------|------|----------|----------------------------------------------------------------------------------------------|------|------|------|------|------------|----|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                           |                                                                                   |      |  42.3 ft |      |      |                                                                                           |      |          |  126.0 ft |      |      |      |      |            |    |                                                                                     |
|                                                                                                          |  | 0,3° | 1°                                                                                        | 0,3° | 1°   | 0,3°                                                                                      | 1°   | 0,3°     | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°   | 0,3°       | 1° |  |
|                                                                                                                                                                                           |                                                                                   | 0°   |                                                                                           | 18°  |      | 36°                                                                                       |      | 0°       |                                                                                              | 18°  |      | 36°  |      |            |    |                                                                                     |
| ft                                                                                                                                                                                        |                                                                                   |      |                                                                                           |      |      |                                                                                           |      | 1,000 lb |                                                                                              |      |      |      |      |            |    | ft                                                                                  |
| 10                                                                                                                                                                                        |                                                                                   | 72.7 | 59.8                                                                                      | -    | -    | -                                                                                         | -    | -        | -                                                                                            | -    | -    | -    | -    | -          | -  | 10                                                                                  |
| 12                                                                                                                                                                                        |                                                                                   | 69.1 | 57.4                                                                                      | -    | -    | -                                                                                         | -    | -        | -                                                                                            | -    | -    | -    | -    | -          | -  | 12                                                                                  |
| 14                                                                                                                                                                                        |                                                                                   | 65.8 | 55.3                                                                                      | -    | -    | -                                                                                         | -    | -        | -                                                                                            | -    | -    | -    | -    | -          | -  | 14                                                                                  |
| 16                                                                                                                                                                                        |                                                                                   | 62.8 | 53.1                                                                                      | -    | -    | -                                                                                         | -    | -        | -                                                                                            | -    | -    | -    | -    | -          | -  | 16                                                                                  |
| 18                                                                                                                                                                                        |                                                                                   | 60.0 | 51.2                                                                                      | -    | -    | -                                                                                         | -    | -        | -                                                                                            | -    | -    | -    | -    | -          | -  | 18                                                                                  |
| 20                                                                                                                                                                                        |                                                                                   | 57.4 | 49.3                                                                                      | 44.3 | -    | -                                                                                         | -    | -        | -                                                                                            | -    | -    | -    | -    | -          | -  | 20                                                                                  |
| 24                                                                                                                                                                                        |                                                                                   | 50.7 | 45.8                                                                                      | 41.2 | 37.6 | -                                                                                         | -    | -        | -                                                                                            | -    | -    | -    | -    | -          | -  | 24                                                                                  |
| 28                                                                                                                                                                                        |                                                                                   | 39.9 | 39.9                                                                                      | 38.7 | 35.4 | -                                                                                         | -    | -        | -                                                                                            | -    | -    | -    | -    | -          | -  | 28                                                                                  |
| 32                                                                                                                                                                                        |                                                                                   | 32.2 | 32.2                                                                                      | 34.8 | 33.6 | 28.2                                                                                      | 26.3 | 26.9     | 21.6                                                                                         | -    | -    | -    | -    | -          | -  | 32                                                                                  |
| 36                                                                                                                                                                                        |                                                                                   | 27.0 | 27.0                                                                                      | 29.4 | 29.2 | 27.0                                                                                      | 25.4 | 23.8     | 21.0                                                                                         | -    | -    | -    | -    | -          | -  | 36                                                                                  |
| 40                                                                                                                                                                                        |                                                                                   | 22.4 | 22.4                                                                                      | 24.4 | 24.4 | 25.5                                                                                      | 24.3 | 20.3     | 18.2                                                                                         | 22.5 | -    | -    | -    | -          | -  | 40                                                                                  |
| 48                                                                                                                                                                                        |                                                                                   | 16.5 | 16.5                                                                                      | 17.9 | 17.9 | 19.3                                                                                      | 19.3 | 15.2     | 13.8                                                                                         | 17.6 | 15.9 | -    | -    | -          | -  | 48                                                                                  |
| 56                                                                                                                                                                                        |                                                                                   | 12.4 | 12.4                                                                                      | 13.3 | 13.3 | 14.2                                                                                      | 14.2 | 11.3     | 10.4                                                                                         | 13.2 | 12.3 | 14.8 | 14.0 | -          | -  | 56                                                                                  |
| 64                                                                                                                                                                                        |                                                                                   | 9.4  | 9.4                                                                                       | 10.1 | 10.1 | -                                                                                         | -    | 8.1      | 7.8                                                                                          | 9.9  | 9.4  | 11.2 | 10.9 | -          | -  | 64                                                                                  |
| 72                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | 5.6      | 5.6                                                                                          | 7.1  | 7.1  | 8.4  | 8.2  | -          | -  | 72                                                                                  |
| 80                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | 3.9      | 3.9                                                                                          | 5.2  | 5.2  | 6.3  | 6.1  | -          | -  | 80                                                                                  |
| 88                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | -        | -                                                                                            | 3.4  | 3.4  | 4.3  | 4.3  | -          | -  | 88                                                                                  |
| 96                                                                                                                                                                                        |                                                                                   | -    | -                                                                                         | -    | -    | -                                                                                         | -    | -        | -                                                                                            | -    | -    | 2.7  | 2.7  | -          | -  | 96                                                                                  |

|  11,000 lb +  33,100 lb |                                                                                     |  55.8 ft  |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |      |                                                                                       |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------|------|------|------|------------|------|---------------------------------------------------------------------------------------|-----|
|                                                                                                                                                                                             |                                                                                     |  42.3 ft |      |                                                                                            |      |  126.0 ft |      |      |      |            |      |                                                                                       |     |
|                                                                                                          |  | 0,3°                                                                                        | 1°   | 0,3°                                                                                       | 1°   | 0,3°                                                                                           | 1°   | 0,3° | 1°   | 0,3°       | 1°   |  |     |
|                                                                                                                                                                                             |                                                                                     | 0°                                                                                          |      | 18°                                                                                        |      | 36°                                                                                            |      | 0°   |      | 18°        |      |                                                                                       | 36° |
| ft                                                                                                                                                                                          |                                                                                     |                                                                                             |      |                                                                                            |      | 1,000 lb                                                                                       |      |      |      |            |      | ft                                                                                    |     |
| 14                                                                                                                                                                                          |                                                                                     | 44.5                                                                                        | 37.4 | -                                                                                          | -    | -                                                                                              | -    | -    | -    | -          | -    | 14                                                                                    |     |
| 16                                                                                                                                                                                          |                                                                                     | 43.0                                                                                        | 36.4 | -                                                                                          | -    | -                                                                                              | -    | -    | -    | -          | -    | 16                                                                                    |     |
| 18                                                                                                                                                                                          |                                                                                     | 41.6                                                                                        | 35.3 | -                                                                                          | -    | -                                                                                              | -    | -    | -    | -          | -    | 18                                                                                    |     |
| 20                                                                                                                                                                                          |                                                                                     | 40.1                                                                                        | 34.2 | -                                                                                          | -    | -                                                                                              | -    | -    | -    | -          | -    | 20                                                                                    |     |
| 24                                                                                                                                                                                          |                                                                                     | 37.4                                                                                        | 32.1 | -                                                                                          | -    | -                                                                                              | -    | -    | -    | -          | -    | 24                                                                                    |     |
| 28                                                                                                                                                                                          |                                                                                     | 34.9                                                                                        | 30.3 | -                                                                                          | -    | -                                                                                              | -    | -    | -    | -          | -    | 28                                                                                    |     |
| 32                                                                                                                                                                                          |                                                                                     | 32.6                                                                                        | 28.5 | 25.5                                                                                       | -    | -                                                                                              | -    | -    | -    | -          | -    | 32                                                                                    |     |
| 36                                                                                                                                                                                          |                                                                                     | 28.5                                                                                        | 26.5 | 24.1                                                                                       | 21.8 | -                                                                                              | -    | 22.9 | 18.1 | -          | -    | 36                                                                                    |     |
| 40                                                                                                                                                                                          |                                                                                     | 24.2                                                                                        | 24.2 | 22.8                                                                                       | 20.8 | -                                                                                              | -    | 20.3 | 17.7 | -          | -    | 40                                                                                    |     |
| 48                                                                                                                                                                                          |                                                                                     | 18.0                                                                                        | 18.0 | 19.9                                                                                       | 18.7 | 16.3                                                                                           | 15.8 | 15.1 | 13.6 | -          | -    | 48                                                                                    |     |
| 56                                                                                                                                                                                          |                                                                                     | 13.9                                                                                        | 13.9 | 15.5                                                                                       | 15.5 | 14.6                                                                                           | 14.6 | 11.0 | 10.5 | 14.1       | 12.8 | 56                                                                                    |     |
| 64                                                                                                                                                                                          |                                                                                     | 10.7                                                                                        | 10.7 | 12.1                                                                                       | 12.1 | 13.1                                                                                           | 13.1 | 8.0  | 8.0  | 10.7       | 10.2 | 64                                                                                    |     |
| 72                                                                                                                                                                                          |                                                                                     | 8.4                                                                                         | 8.4  | 9.5                                                                                        | 9.5  | 10.4                                                                                           | 10.4 | 5.8  | 5.8  | 8.0        | 8.0  | 72                                                                                    |     |
| 80                                                                                                                                                                                          |                                                                                     | 6.8                                                                                         | 6.8  | 7.4                                                                                        | 7.4  | -                                                                                              | -    | 4.0  | 4.0  | 5.9        | 5.9  | 80                                                                                    |     |
| 88                                                                                                                                                                                          |                                                                                     | -                                                                                           | -    | -                                                                                          | -    | -                                                                                              | -    | -    | -    | 4.3        | 4.3  | 88                                                                                    |     |
| 96                                                                                                                                                                                          |                                                                                     | -                                                                                           | -    | -                                                                                          | -    | -                                                                                              | -    | -    | -    | 3.0        | 3.0  | 96                                                                                    |     |
| 104                                                                                                                                                                                         |                                                                                     | -                                                                                           | -    | -                                                                                          | -    | -                                                                                              | -    | -    | -    | -          | -    | 104                                                                                   |     |



# HAV-HY

|  0 lb +  33,100 lb |                                                                                   |          |  16.4 ft |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|------|------|------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                      |                                                                                   |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                     |
|                                                                                                     |  | 0,3°     | 1°                                                                                        | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                           | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                      |                                                                                   | 0°       |                                                                                           | 18°  |                                                                                           | 36°  |                                                                                              | 0°   |      | 18°  |            |                                                                                     |
| ft                                                                                                                                                                                   |                                                                                   | 1,000 lb |                                                                                           |      |                                                                                           |      |                                                                                              |      |      |      |            | ft                                                                                  |
| 10                                                                                                                                                                                   |                                                                                   | 119.2    | 105.6                                                                                     | 89.2 | -                                                                                         | -    | -                                                                                            | -    | -    | -    | -          | 10                                                                                  |
| 12                                                                                                                                                                                   |                                                                                   | 109.5    | 96.7                                                                                      | 85.9 | 80.0                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 12                                                                                  |
| 14                                                                                                                                                                                   |                                                                                   | 91.3     | 81.2                                                                                      | 82.9 | 77.5                                                                                      | -    | -                                                                                            | -    | -    | -    | -          | 14                                                                                  |
| 16                                                                                                                                                                                   |                                                                                   | 77.1     | 69.4                                                                                      | 79.8 | 72.9                                                                                      | 65.7 | 61.8                                                                                         | -    | -    | -    | -          | 16                                                                                  |
| 18                                                                                                                                                                                   |                                                                                   | 65.4     | 60.6                                                                                      | 69.4 | 64.7                                                                                      | 63.8 | 60.7                                                                                         | -    | -    | -    | -          | 18                                                                                  |
| 20                                                                                                                                                                                   |                                                                                   | 54.5     | 52.5                                                                                      | 57.8 | 56.2                                                                                      | 60.6 | 58.6                                                                                         | -    | -    | -    | -          | 20                                                                                  |
| 24                                                                                                                                                                                   |                                                                                   | 40.0     | 40.0                                                                                      | 42.4 | 42.4                                                                                      | 44.5 | 44.5                                                                                         | -    | -    | -    | -          | 24                                                                                  |
| 28                                                                                                                                                                                   |                                                                                   | 30.5     | 30.5                                                                                      | 32.4 | 32.4                                                                                      | 33.9 | 33.9                                                                                         | 27.3 | 23.9 | -    | -          | 28                                                                                  |
| 32                                                                                                                                                                                   |                                                                                   | 23.9     | 23.9                                                                                      | 25.5 | 25.5                                                                                      | 26.5 | 26.5                                                                                         | 22.7 | 20.1 | 24.3 | 19.0       | 32                                                                                  |
| 36                                                                                                                                                                                   |                                                                                   | 19.5     | 19.5                                                                                      | 20.7 | 20.7                                                                                      | 21.5 | 21.5                                                                                         | 19.1 | 17.1 | 20.6 | 18.6       | 36                                                                                  |
| 40                                                                                                                                                                                   |                                                                                   | 15.7     | 15.7                                                                                      | 16.5 | 16.5                                                                                      | -    | -                                                                                            | 15.9 | 14.4 | 17.2 | 15.7       | 40                                                                                  |
| 48                                                                                                                                                                                   |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 11.2 | 10.3 | 12.2 | 11.4       | 48                                                                                  |
| 56                                                                                                                                                                                   |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 7.6  | 7.2  | 8.5  | 8.1        | 56                                                                                  |
| 64                                                                                                                                                                                   |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 4.9  | 4.8  | 5.8  | 5.6        | 64                                                                                  |
| 72                                                                                                                                                                                   |                                                                                   | -        | -                                                                                         | -    | -                                                                                         | -    | -                                                                                            | 2.9  | 2.9  | 3.6  | 3.4        | 72                                                                                  |

|  0 lb +  33,100 lb |                                                                                     |          |  36.1 ft  |      |  11.5 ft |      |  32.2 ft/s  |      | 360° |      | ASME B30.5 |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------|------|------|------|------------|---------------------------------------------------------------------------------------|
|                                                                                                                                                                                      |                                                                                     |          |  42.3 ft |      |                                                                                           |      |  126.0 ft |      |      |      |            |                                                                                       |
|                                                                                                   |  | 0,3°     | 1°                                                                                         | 0,3° | 1°                                                                                        | 0,3° | 1°                                                                                            | 0,3° | 1°   | 0,3° | 1°         |  |
|                                                                                                                                                                                      |                                                                                     | 0°       |                                                                                            | 18°  |                                                                                           | 36°  |                                                                                               | 0°   |      | 18°  |            |                                                                                       |
| ft                                                                                                                                                                                   |                                                                                     | 1,000 lb |                                                                                            |      |                                                                                           |      |                                                                                               |      |      |      |            | ft                                                                                    |
| 10                                                                                                                                                                                   |                                                                                     | 72.7     | 59.8                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 10                                                                                    |
| 12                                                                                                                                                                                   |                                                                                     | 69.1     | 57.4                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 12                                                                                    |
| 14                                                                                                                                                                                   |                                                                                     | 65.8     | 55.3                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 14                                                                                    |
| 16                                                                                                                                                                                   |                                                                                     | 62.8     | 53.1                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 16                                                                                    |
| 18                                                                                                                                                                                   |                                                                                     | 59.9     | 51.2                                                                                       | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 18                                                                                    |
| 20                                                                                                                                                                                   |                                                                                     | 56.5     | 49.0                                                                                       | 44.3 | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 20                                                                                    |
| 24                                                                                                                                                                                   |                                                                                     | 43.4     | 41.4                                                                                       | 41.2 | 37.6                                                                                      | -    | -                                                                                             | -    | -    | -    | -          | 24                                                                                    |
| 28                                                                                                                                                                                   |                                                                                     | 33.8     | 33.7                                                                                       | 36.7 | 35.2                                                                                      | -    | -                                                                                             | -    | -    | -    | -          | 28                                                                                    |
| 32                                                                                                                                                                                   |                                                                                     | 27.0     | 27.0                                                                                       | 30.0 | 30.0                                                                                      | 28.2 | 26.3                                                                                          | 21.5 | 17.0 | -    | -          | 32                                                                                    |
| 36                                                                                                                                                                                   |                                                                                     | 22.5     | 22.5                                                                                       | 24.9 | 24.9                                                                                      | 25.5 | 24.5                                                                                          | 19.0 | 16.8 | -    | -          | 36                                                                                    |
| 40                                                                                                                                                                                   |                                                                                     | 18.5     | 18.5                                                                                       | 20.5 | 20.5                                                                                      | 22.4 | 22.4                                                                                          | 15.9 | 14.2 | 18.1 | -          | 40                                                                                    |
| 48                                                                                                                                                                                   |                                                                                     | 13.3     | 13.3                                                                                       | 14.7 | 14.7                                                                                      | 16.1 | 16.1                                                                                          | 11.4 | 10.4 | 13.7 | 12.5       | 48                                                                                    |
| 56                                                                                                                                                                                   |                                                                                     | 9.7      | 9.7                                                                                        | 10.6 | 10.6                                                                                      | 11.5 | 11.5                                                                                          | 7.8  | 7.4  | 9.9  | 9.3        | 56                                                                                    |
| 64                                                                                                                                                                                   |                                                                                     | 7.1      | 7.1                                                                                        | 7.6  | 7.6                                                                                       | -    | -                                                                                             | 5.1  | 5.1  | 6.9  | 6.7        | 64                                                                                    |
| 72                                                                                                                                                                                   |                                                                                     | -        | -                                                                                          | -    | -                                                                                         | -    | -                                                                                             | 3.1  | 3.1  | 4.7  | 4.7        | 72                                                                                    |
| 80                                                                                                                                                                                   |                                                                                     | -        | -                                                                                          | -    | -                                                                                         | -    | -                                                                                             | -    | -    | -    | -          | 80                                                                                    |



# Notes to Lifting Capacity

Ratings are in compliance with ASME B 30.5.

Weight of hook blocks and slings is part of the load, and is to be deducted from the capacity ratings.

Consult operation manual for further details.

**Note:** Data published herein is intended as a guide only and shall not be construed to warrant applicability for lifting purposes. Crane operation is subject to the computer charts and operation manual both supplied with the crane.

# Technical Description

## Basic machine

### Crawler Carrier

Carrier comprising a carbody, 4 extension beams and 2 crawlers; easy pin connection between crawler and extension beams.

#### Carbody

Bending and torsion resistant welding construction, made of high strength fine grain steel.  
Bottom car body design suitable for any trailer type.  
Hydraulic and electric lines are protected and guided inside sliding energy chains with quick connections to crawler drives.

#### Track extension

Track width adjustment (adjustable in 3 positions): 11.5 ft, 15.6 ft, 19.7 ft  
Track adjustment possible on the spot or during traveling (control from cabin or with remote control)  
Integrated protected extension cylinders  
Removable track extension beams (incl. hydraulic cylinders), quick couplings and electric connectors for easy coupling/disconnecting of hydraulic hoses and elec cables. Dedicated lift points and clear indication of component weight

#### Crawlers

B9HD components (10.2 in. pitch), excavator type, oil lubricated sealed rollers and idler wheel;  
13 bottom rollers and 4 chain guides on each side  
2-bar 39.4 in. crawler shoes  
Large integrated platform above the track shoes with sliding platforms between crawlers and car body;  
two integrated inclinable ladders at each crawler frame

#### Crawler drive

The tracks are powered by one hydraulic motor each through closed planetary gear drive running in oil bath, equipped with spring-applied hydraulically released holding brakes; Each crawler speed is infinitely variable, both independently and in opposite direction. Drives are equipped with counterbalance valve and speed sensor.  
Traction force: 326,000 lbf in total  
Travelling speed: up to 1.43 mph

#### Crawler assembly

Self-assembly with 4 x container lift points accessible from ground and platform  
Pinning of crawler frames to extension beams is manual; pinning is done from the outside  
Hydraulic and electric quick coupling for quick and reliable assembly/disassembly

#### Assembly jacks

Outrigger legs with 2 positions (transport, in longitudinal direction and rigging, in outward direction)  
Outrigger cylinders can tumble (with assistance spring allowing low ergonomic human force) to maximize ground clearance during travelling.  
Jacks with integrated check valves and pressure sensor, allowing auto levelling

#### Outriggers

4 rectangular outrigger steel pads  $A = 0.56 \text{ ft}^2$   
Outrigger pads can remain on cylinders, even in tumbled position (no need to detach and handle pads, no impact on ground clearance)  
2 x 2 handles to allow comfortable handling; storage place at the side of the outrigger leg

#### Central ballast

2 x steel box type central ballast with 16,540 lb each  
Anti-slip top surface; integrated lift points; Accessible manual pinning to secure central ballast  
No loose parts  
Geometry with slope angle to mitigate ground interference whilst traveling on rough terrain  
On front central ballast: large rack plate for tool box or other customized storage items  
On rear central ballast: large robust open top box, integrated in central ballast, for storage of e.g. slings.  
Includes automatic counterweight detection  
Upper counterweight is positioned on central ballast for automatic counterweight self-rigging

# Technical Description

## Basic machine

### Superstructure

#### Powertrain

#### Engine 230 kW, EU Stage V EPA Tier 4f

Bending and torsion resistant welding construction, made off high strength fine grain steel.

Mercedes-Benz diesel engine, type OM 936 LA, 6 cylinder,

230 kW (308 HP) at 1800 rpm, torque 1300 Nm at 1200 rpm

The engine complies with emission standard EU Stage V / EPA Tier 4f.

Connected with a variable displacement axial piston double pump, a single variable displacement axial piston pump incl. electronic control system and gear pumps.

Stainless steel silencer with spark arrestor

ECO mode with optimized fuel consumption at 1500 rpm

Power boost function to allow full speed with maximum power and simultaneous movements at 1800 rpm

#### Tanks

140 gallons Diesel tank; 10.5 gallons tank for AdBlue/DEF; 291 gallons hydraulic tank

#### Counterweight

Base plate 11,025 lb and four identical 22,050 lb cast slabs with integrated lifting anchors (mushroom-type) and anti-slip top surface

Base plate width 11.5 ft; 22,050 lb counterweight slab width 13.1 ft

Loadcharts available for various counterweight configurations

Includes automatic counterweight detection/monitoring during rigging process

Counterweight slabs designed to integrate large access steps, holes for handhold bars (standard) and fall protection mast (option)

Counterweight base plate and slabs designed to allow attachment of external 55 kW powerpack

Automated mechanical securing of counterweight stack to the upper structure, allows reliable traveling and prevents work at height when rigging

#### Slewing

Triple-row roller bearing slewing with external ring gear for easy maintenance and service

Central lubrication system

#### Slewing drive

Powerful dual slewing drives with spring-loaded multi-disc brake

Mechanical house locking in 0° and 180° positions, controlled through hydraulic cylinder from cabin; allows robust travelling under maximum gradeability and transport on trailer with free boom (no need to tie down boom head)

#### Hoist

Hoist powered with adjustable hydraulic motor and planetary gear (running in oil bath), with spring applied hydraulically released multi disk brakes and a lowering brake valve for load lowering

Resolver (hoist rotation indicator)

1.02 in. rope, length H1 = 804 ft, line pull = 30,400 lbf (30,700 lb)

Includes load spectrum monitoring: device to record load spectrum of hoist

Preparation for auxiliary hoist, preparation in steel structure and hydraulic system for future installation of auxiliary hoist; includes 2nd deflector sheave in main boom tip

#### Control system IC-1

With integrated load moment indicator acc. EN13000; Color display; Displaying of current operating conditions, load charts, fault indicator; Signal lights indicating LMI-load; Crane data logger

Calculation of lifting capacity according to track base and ground angle

Variable track width possible (3 track positions)

Monitoring of each track frame (horizontal position)

Detection of counterweight and central ballast and warning message in case the actual weight does not match with the selected configuration

Hook height indication: displaying and programmability of the hook height H1 by IC-1

Working range limiter: displaying and programmability of the work range limits by IC-1

Anemometer: disconnectable, to allow use with all extensions

Remote control: control of rigging and operations via wireless remote control, for all functions incl. travelling and self-assembly (option)

#### Cabin

Type 2.87 ft; Infinitely tiltable 16°; sliding window in rear of cab and door; Fold-out front window;

Handrails; Tinted safety glass; pull-down sun visor and light curtains; Seat heating

Cabin access platform: Large platform at front of cabin, with positioning slots for ladder for easy access to cabin, including when crane is still on trailer (engine start)

Side platform electrically extendable with 2 push buttons at front platform (accessible from ladder) and inside cabin

Heating cabin: Engine independent warm water diesel powered heating with 5 kW heating power

With timer

Radio CD: Radio with CD-player with USB connector, Aux-In and Bluetooth® connection

Air conditioning: Air-conditioning with 5 kW rated cooling capacity

### Boom

#### Telescopic boom

42.3 ft - 196.9 ft; Single cylinder telescoping system, automatic telescoping; Attachments for all equipment and extensions; 5 steel sheaves integrated in boom head for max. capacity of 290,700 lb

(345,000 lb with additional heavy lift sheave (option))

#### Sheaves

Steel sheaves D520 (for D 1.02 in. rope) with 5.1 in. / 7.5 in. double roller bearing, same type in the whole crane; sheaves are equipped with grease points

# Technical Description

## Optional Equipment (non-exhaustive)

### Carbody

**Track width adjustment  
(variable INFINITE)**

Track base infinitely adjustable (incl. non-symmetrical); the IC-1 Plus control system is automatically determining the permissible lifting capacity based on the track extension, slewing position and ground roll/list angle.

**Automated central  
lubrication**

Electronically controlled automated lubrication of the extension beam sliding pads

### Crawler

**Crawler shoes**

39.4 in. flat shoes  
47.2 in. flat shoes  
47.2 in. 2-bar shoes  
39.4 in. Polyamid plastic pads (for 39.4 in. 2-bar shoes)

### Superstructure

**Aux hoist H2**

2nd hoist; Spring-loaded multi-disc brake; Resolver (hoist rotation indicator); Incl. quick couplings;  
Rope twist prevention is not included  
Can be self-assembled on counterweight-stack, for various counterweight configurations  
1.02 in. rope, length H1 = 804 ft, line pull = 30,400 lbf (30,700 lb)  
Convenient and safe reeving with reeving rope and rope guiding stick  
Includes 1.02 in. rope socket  
Includes load spectrum monitoring: device to record load spectrum of hoists with memory box attached to hoist winch to allow recording of loads irrespective of the crane the winch is installed on.

### Jib – Extensions

**HAV 16.4 ft**

16.4 ft; Lattice jib, manual offset 0°/18°/36° with hydraulic assist cylinder; 2-sheave head (steel sheaves for 1.02 in. rope); Incl. transport storage  
Consist of 11.5 ft foot section + 4.9 ft tip section

**HAV-HY 16.4 ft**

16.4 ft; Lattice jib, hydraulic offset from 0° to 36° with two hydraulic cylinders, adjustable under load; 2-sheave head (steel sheaves for 1.02 in. rope); Incl. transport storage  
Consist of 11.5 ft foot section + 4.9 ft tip section

**HAV 75.5 ft**

75.5 ft; Lattice jib, manual offset 0°/18°/36° with hydraulic assist cylinder; 2-sheave head (steel sheaves for 1.02 in. rope); Incl. transport storage (only 16.4 ft jib can be stowed in transport position)  
Consist of 11.5 ft foot section + 4.9 ft tip section + 19.7 ft intermediate section + 39.4 ft intermediate section  
Possible jib length: 16.4 ft, 36.1 ft, 55.8 ft, 75.5 ft

**HAV-HY 75.5 ft**

75.5 ft; Lattice jib, hydraulic offset from 0° to 36° with two hydraulic cylinders, adjustable under load; 2-sheave head (steel sheaves for 1.02 in. rope); Incl. transport storage (only 16.4 ft jib can be stowed in transport position)  
Consist of 11.5 ft foot section + 4.9 ft tip section + 19.7 ft intermediate section + 39.4 ft intermediate section  
Possible jib length: 16.4 ft, 36.1 ft, 55.8 ft, 75.5 ft

**R1 (Swing-away rooster  
sheave)**

Swing-away rooster sheave for 1.02 in. rope, incl. transport storage; For single-reeving high speed operation with elevated hook height; incl. electrical equipment and hoist limiter.

### Hook Blocks

**Hook block 160-5-26-D  
Vario**

For 1.02 in. rope, 5-sheave (11-lines) for up to 318,100 lb, NOT SUITABLE FOR MAX. LOAD 345,000 lb  
- Double hook  
- Vario system with removable side weight (cheek plates) (2,430 lb or 2,870 lb);  
with removed plates, the hook block weight corresponds to the weight of the 3-sheave block

**Hook block 160-5-26-E  
Vario**

For 1.02 in. rope, 5-sheave (11-lines) for up to 318,100 lb, NOT SUITABLE FOR MAX. LOAD 345,000 lb  
- Single hook  
- Vario system with removable side weight (cheek plates) (2,430 lb or 2,870 lb);  
with removed plates, the hook block weight corresponds to the weight of the 3-sheave block

**Hook block 100-3-26-D**

For 1.02 in. rope, 3-sheave (7-line) – required for 206,600 lb  
- Double hook

**Hook block 100-3-26-E**

For 1.02 in. rope, 3-sheave (7-line) – required for 206,600 lb  
- Single hook

**Hook block 41-1-26-E**

For 1.02 in. rope, 1-sheave (3-line) – required for 90,300 lb  
- Single hook

**Headache ball 16-0/26-E**

For 1.02 in. rope – hook, red – required for 30,400 lb











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