

Engineering Spec

IC-250-3C



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Date: Mar. 2009
Replaces: Form ID108C
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The IC-250-3C is a self-propelled Industrial Crane designed for material handling and maintenance and repair of equipment, with special features of self-loading cargo decks, 4-wheel steer, and front-wheel drive (4-wheel drive optional). The basic unit consists of a chassis and hydraulic boom assembly. The chassis includes a frame, four hydraulic independently controlled outriggers, engine, torque converter, powershift 4-speed transmission, front planetary drive/steer axle and rear steer-only axle, fuel tank, hydraulic tank, control station, power steering and dual power brakes. The boom assembly includes a hydraulic powered continuous rotation turret, proportional 4-section telescopic boom, hydraulic boom elevating cylinder, hydraulic boom telescope cylinder and hydraulic powered hoist. Rated Capacity Limiter is standard.

IC-250-3C:

4-section hydraulically extended boom with capacity of 36,000 pounds (16,330 kg) at a 6-foot (1.83 m) load radius. Horizontal reach of 50 feet 1 inch (15.26 m) and vertical reach of 60 feet 7 inches (18.47 m).

General:

Length:

Overall 23 feet 6 inches (7.16 m)
Chassis 15 feet 6 inches (4.72 m)

Width: 7 feet 10 inches (2.39 m)

Height:

Overall 7 feet 11 inches (2.41 m)
Deck 47 inches (1.19 m)

Wheelbase: 100 inches (2.54 m))

Ground Clearance: 13 inches (33 cm)

Angle of Approach: 25 degrees

Angle of Departure: 23 degrees

Outriggers:

Spread 14 feet 9 inches (4.50 m)
Penetration 3 inches (7.62 cm)

Boom Movement:

Rotation Continuous
Elevation 0 to 75 degrees
Telescope 34 feet 6 inches (10.52 m)

Boom Speeds:

Rotation 2.0 RPM
Elevation 24 seconds
Telescope 53 seconds

Extension:

	W/O Boom Extension	With Boom Extension
Sheave Height (Nominal):	60 feet 7 inches (18.46 m)	79 feet 6 inches (24.23 m)
Horizontal Reach:	50 feet 1 inch (15.26 m)	70 feet 1 inch (21.36 m)

Weight:

Total 37,700 pounds (17,100 kg)
Front Axle 17,400 pounds (7,900 kg)
Rear Axle 20,300 pounds (9,200 kg)



**General: (cont'd.)****Turning Radius:**

(4-Wheel Steering) 14 feet 4 inches (4.37 m)

Aisle Width for 90° Turn:

11 feet 11 inches (3.61 m)

Steering Modes:

Rear Steer, Round Steer, Crab Steer

Road Speed:

18 MPH (29 kph)

Drawbar Pull:

Cummins 3.3L 18,600 pounds* (8,437 kg)

GM 5.7L 21,400 pounds* (9,706 kg)

Gradeability:

64 percent*

*Calculated, wheels spin below these values in 2-wheel drive.

Grade Limit:

15 percent

Engine:**Standard:****Cummins QSB3.3L Turbo, EPA Tier 3:**

Cummins Model QSB3.3 turbocharged diesel engine. Water cooled, 4-cylinder, 199 CID (3.3L), 3.74" (9.5 cm) bore, 4.53" (11.53 cm) stroke, 99 HP (74 kw) at governed speed of 2,500 RPM. Maximum torque is 304 ft. lbs. (410-n-m) at 1,400 RPM. 120-amp alternator included. 30 gallon (114 L) fuel tank capacity. High temperature and low oil pressure shutdown included in engine management system. Throttle control switch for setting engine speed at 1,200 or 1,800 RPM. Charge air cooler and grid heater included.

Optional Engine and Engine Accessories:**GM 5.7L V-8 EPA Tier 2 Woodward LPG Fuel:**

GM Model 5.7L V-8 industrial LPG engine complete with electronic LPG fuel injection, and engine management system. Includes water cooled, 8-cylinder, 350 CID (5.7L), 4.00" (10.16 cm) bore, 3.48" (8.84 cm) stroke, 135 HP (100 kw) at governed speed of 2,500 RPM. Maximum torque is 307 ft. lbs. (416-n-m) at 1,500 RPM. Also includes special exhaust valves, seats and valve rotators for use with LPG, 100-amp alternator, catalytic converter, dual 43 pound LPG tanks with quick disconnects, and high temperature and low oil pressure shutdown. US EPA Tier 2 emissions certified. Net Weight: 175 pounds (80 kg), including 2 aluminum LP tanks.

Spark Arrester Muffler:

Spark arrester muffler used in addition to standard muffler. Net Weight: 10 pounds (4.5 kg)

Catalytic Converter:

Catalytic converter for diesel engines. Reduces engine emissions. Net Weight: 10 pounds (4.5 kg)

Engine Heater:

Heater for engine. Engine coolant heater installed with hoses in coolant system to circulate warm water through engine. Plugs into 120-volt AC extension cord: 1,500 watts.

Transmission:**Standard 2-Wheel Drive:**

Powershift transmission with four speeds in forward and reverse. Provides powershifts at any engine speed in any gear. All shifting is done with a single lever electrical control mounted on the steering column. Multiple-disc clutch packs operated by solenoid valves provide reverse, neutral, forward and speed selection. Equipped with oil cooler and filter.





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Optional 4-Wheel Drive Transmission:

Same as 2WD transmission with an additional output shaft to drive the rear axle. Rear output shaft runs faster than front by a ratio of 1.58 to 1. Rear axle has more reduction than front axle to match speed of front. Electrohydraulic control for shifting between 2WD and 4WD. This option includes the 4-wheel drive axle listed below. (Net Weight: 310 pounds for 4WD system)

Transmission gear ratios:		Forward and Reverse (2WD & 4WD)
1st		5.72 to 1.0
2nd		3.23 to 1.0
3rd		1.77 to 1.0
4th		1.00 to 1.0

Torque Converter:

Standard:

Stall torque ratio of 2.2:1, attached to engine flywheel.

Front Axle:

Standard:

Planetary drive/steer front axle with 15.78 to 1.0 ratio. Differential equipped with "limited slip" feature. Driving effort is applied to wheel that has traction. Front axle mounted rigidly to frame.

Calculated Performance:

Gear	Travel Speeds (MPH)	Gradeability*	Drawbar Pull (pounds)
1st	3 (5 km/h)	64	18,600 (8,440 kg)
2nd	5 (8 km/h)	36	10,700 (4,850 kg)
3rd	10 (16 km/h)	19	5,800 (2,630 kg)
4th	18 (29 km/h)	10	3,100 (1,410 kg)

*Calculated, wheels may spin in 1st or 2nd gear before these values are reached with 2-wheel drive.

Rear Axle:

Standard

2-Wheel Drive:

Steering axle with 1½° oscillation in either direction.

Optional 4-Wheel Drive:

Planetary drive/steer axle with 24.98 to 1.0 ratio. Differential is not "limited slip" in rear axle. 1½° oscillation in either direction. (Axle ratio compatible with 4WD transmission rear output ratio to match front axle speed.

Net Weight: 230 pounds (104 kg)

Steering:

Standard:

Hydraulic steering unit with two 3-inch cylinders attached to each axle. Allows limited steering when engine is not running. A switch on the control panel is used to select rear-wheel steering or four-wheel (round) steering.

Brakes:

Standard:

Split-system, four-wheel hydraulically-boosted multiple-plate wet disc brakes. Uses mineral oil. Hand lever actuated disc-type parking brake on transmission.

Tires:

Standard:

2-Wheel & 4-Wheel Drive 385/65D22.5, 16-ply, high-traction on/off road tread.

Tire Options:

Non-Marking Pneumatic:

385/65D22.5 16-ply. Net Weight: 140 pounds (64 kg)

Foam Filling of Tires:

Foam filling of four IC-250 tires. Net Weight: 2,000 pounds (900 kg)

**Tire Options: (Cont'd)****Spare Tire and Wheel, Mounted:**

Extra wheel with 385/65D22.5 tire mounted: Ready for service. Net Weight: 335 pounds (152 kg)

Spare Tire and Wheel, Mounted, Non-Marking Pnuematic:

Extra wheel with Non-Marking 385/65D22.5 tire mounted, ready for service.
Net Weight: 335 pounds (152 kg)

Chassis:**Standard:****Cargo Deck:**

Total Deck Area: 80 Square Feet (7.43m²)(Front deck 94" (239 cm) X 62" (157 cm), RH side deck 182" (462 cm) X 28" (71 cm)). A maximum of 17,000 pounds (7,700 kg) may be carried on the deck when centered over or between axles. Seven stake pockets are provided along edges of deck for 1-inch (2.5 cm) pipe stakes. Stakes furnished. Cargo decks have skid resistant coating.

Chassis: (Cont'd)**Headlight and Taillight Grilles:**

Steel protective grilles for headlights and taillights. Easily removable for replacing bulbs.

Outriggers:

Four hydraulic out-and-down outriggers of box-beam construction. Independent controls for each outrigger. Hydraulic cylinders are equipped with direct-connected holding valves. Pad dimensions: 9 inches (22.86 cm) x 9 inches (22.86 cm).

Pulling Eyes:

Two heavy eyes in front bumper provide for attachment of hook block so main winch line can be used for pulling loads at or near floor level. Also for anchoring tag lines from load on hook.

Tie Downs:

Two holes in the rear bumper (in conjunction with the pulling eyes) provide tie down locations for transporting crane by truck or cargo container.

Accessory Storage Box:

Consists of front deck plate with removable and lockable cover, and box for carrying sheave block and other items. Storage box is 14" (36 cm) deep x 12½" (32 cm) long x 36½" (93 cm) wide.

Lifting Rings:

Consists of four rings, one at each corner of the load deck, so sling can be attached for lifting crane. Rings hang below deck surface when not in use

Chassis Options and Accessories:**Auxiliary Winch:**

Optional worm gear winch, mounted behind front bumper, with a single lever control at the operator's console. Hydraulic powered to provide bare drum line pull of 10,000 lbs. (4,500 kg) at 40 ft. (12 m) per minute. Winch drum is 3½" (9 cm) dia. by 10" (25 cm) long. This winch includes 115 ft. (35 m) of 7/16" (11 mm) wire rope, hook and four-way roller guide. Rated load on the wire rope is 5,800 pounds (2,600 kg).
Net Weight: 250 pounds (113 kg)

Pintle Hook - Rear:

T-60-AOL Holland pintle hook mounted on rear frame member, provides capacity for 6,000 pound (2,700 kg) tongue weight and 30,000 (13,600 kg) pound trailer weight. Net Weight: 15 pounds (7 kg)

Pintle Hook - Front:

T-60-AOL Holland pintle hook mounted on front frame member, provides capacity for 6,000 pound (2,700 kg) tongue weight and 30,000 (13,600 kg) pound trailer weight. Net Weight: 45 pounds (20 kg)

Outrigger Shoes:

Steel outrigger shoes, 18 X 18 inch (46 cm X 46 cm) octagonal shape with storage posts on rear bumper.
Net Weight: 170 pounds (77 kg)



**Chassis Options and Accessories: (Cont'd)****Rearview Mirrors:**

One right-hand and one left-hand mirror, 6" (15 cm) wide x 16" (41 cm) high, mounted on deck stakes. Pivot out of way when contacted by obstacle at side of deck. Net Weight: 12 pounds (5.4 kg)

Operator Compartment:**Standard:**

Operator control station provides one-position access to all chassis and crane functions. Includes adjustable operator's seat and seat belt.

Operator Guard: (Not Available with Cab)

Tubular steel weldment with heavy expanded steel mesh top section, bolts over the operator's compartment. Net Weight: 60 pounds (27 kg)

Operator Guard Cover:

Clear vinyl cover goes over guard for inclement weather. Has zipper and velcro roll-up door. Net Weight: 15 pounds (27 kg)

All Weather Cab:

Consists of rigid mounted canopy section and removable hinged door with safety glass. Rugged canopy structure with laminated glass front and top. Door is equipped with a keyed lock to protect operator's station. Includes defroster fan, dome light, 12,400 BTU heater with 2-speed fan and 12V electric windshield wiper. There are sliding windows in the door and right-hand side. Net Weight: 220 pounds (100 kg)

Cab Heater only:

Provides 12,400 BTU heater with two-speed fan for units without All Weather Cab. Net Weight: 12 pounds (5.4 kg)

Windshield Washer:

Provides reservoir, pump and nozzle for windshield washer.

Floor Mat:

Vinyl mat with foam backing covers floor, front wall and lower portion of right hand wall of operator's compartment. (Net Weight: 5 pounds)

Operator's Suspension Seat:

Provides additional operator comfort. Net Weight: 15 pounds (7 kg)

Noise Reduction Kit - Cab:

Includes vinyl floor mats and control valve cover and side panels of foam-backed, perforated vinyl for noise reduction. Net Weight: 15 pounds (7 kg)

Air Conditioning:

Provides factory system using R134A refrigerant. Compact AC unit mounted in operator's area, fan cooled condenser mounted under fuel tank and belt driven compressor with magnetic clutch driven by engine. Net Weight 125 lbs. (57 kg)

Electrical System:**Standard:****12 Volt DC****Battery:**

Diesel Units: Group 31 with 950 CCA rating.

Gas Units: Group 27 with 540 CCA rating.

Lighting Group:

Consists of two 12V-lamps, with high and low beams for driving; tail, brake and turn signal lights and backup lights in rear; front turn signals and emergency flasher switch at operator's station. 12V horn actuated by button located on shifting control.



**Instrument Group:**

Located at operator's station, includes fuel gauge and hourmeter which records hours only during actual engine operation. Also included are warning lights for low oil and transmission pressure, check engine, high coolant and transmission temperature, turn signals, high beams, hazard lights, parking brake and four-wheel drive.

Back-Up Alarm:

Provides pulsating sound from a 97 dB alarm when ignition is on and transmission is in reverse.

Outrigger Alarm System:

112 dB alarm with alternating two-tone sound is actuated by a switch when the **OUTRIGGER DOWN** or **OUTRIGGER OUT** controls are operated.

Optional Electrical Accessories:**Strobe Lights:**

Two yellow strobe lights, one on each side of turret weight box, for high visibility all around crane. Flashes 60-120 times per minute. Each strobe draws only one-half amp. Includes operator controlled switch.

Net Weight: 5 pounds (2.25 kg)

Boom Work Lights:

Two halogen work lights, one on left side of boom to light boom tip, and one on right side of the turret to light ground under boom tip. Includes switch at operator's station. Net Weight: 10 pounds (4.5 kg)

Rear Work Lights:

Two work lights behind rear grill. Provides lighted work area to the rear of machine.

Hydraulic System:**Standard:**

Tandem pump, direct-driven by engine, delivers 29 GPM (108 L/m) at 3,000 PSI (207 bar) and 34 GPM (129 L/m) at 2,500 PSI (172 bar) at 2,500 RPM governed engine speed. System protected by relief valves, suction line strainer and 10-micron return line filter. 54-gallon (53 L) reservoir equipped with breather and filler cap.

Boom Assembly:**Standard:**

Four-section, high strength steel construction, equipped with bearing pads for efficient support and extension. Double-acting hydraulic cylinder and chain system telescopes boom sections proportionally. The telescope cylinder and the double-acting boom elevation cylinders are equipped with cylinder-mounted holding valves. Boom angle indicators are on each side of boom.

Boom Rotation:**Standard:**

Heavy-duty bearing rotation gear with external teeth supports boom. Rotation is powered by hydraulic motor and worm gear drive. Rotation gearbox may be adjusted as wear occurs to minimize backlash. Boom is attached by steel weldment.

Boom Hoist:**Standard:**

Turret-mounted planetary gear hoist, is hydraulically powered to provide a bare-drum line pull of 12,000 pounds (5,440 kg) and a speed of 100 feet (30 m) per minute. Hoist drum is 9 7/8-inch (25 cm) diameter by 16½ inches (42 cm) long. The hoist includes 320 feet (97.5 m) of 9/16 inch (14.3 m) wire rope, 170 pound (82 kg) downhaul weight and swivel hook.





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Boom Attachments:**Standard:****Anti-Two-Block Device:**

Prevents damage to hoist rope and/or machine components from accidentally pulling sheave block or downhaul weight against boom tip. Consists of trip arm at boom tip which is moved upward by sheave block or downhaul weight as hook approaches boom tip. Trip arm actuates electric switch which is connected through cable reel mounted on turret to solenoid dump valve in the hydraulic circuit. This valve will dump the **HOIST RAISE**, **TELESCOPE EXTEND**, **BOOM LOWER**, **SWING LEFT** and **SWING RIGHT** circuits. No other circuits are affected. These circuits are returned to normal operation by operating the **HOIST LOWER** or **TELESCOPE RETRACT** control.

Rated Capacity Limiter:

Warns operator of impending overload with audible and visual signals. Has read-outs for load, boom angle, boom length and load radius. Prevents overload by dumping boom functions that cause overload: **HOIST RAISE**, **TELESCOPE EXTEND**, **BOOM LOWER**, **SWING LEFT** and **SWING RIGHT**. These circuits are returned to normal by lowering load to a safe resting place with hoist or by retracting or raising boom to a shorter load radius. There is a key-operated override switch under the dashboard.

Boom Attachments: (Con'd)**Four-Part-Line Sheave Block:**

Double sheave block for four-part-line requirements. 10-inch (25 cm) OD sheaves for 9/16 inch (14.3 mm) diameter wire rope. Swivel hook with safety latch. 300 pound (136 kg) weight provides positive overhaul. Includes bar on top to actuate trip arm of Anti-Two-Block Device.

Optional Boom Attachments:**Boom Extension - 20 Ft. (6.1 m) Offset:**

Provides 20 feet (6.1 m) of additional length for lifting loads with load line. Boom extension may be stowed alongside base boom section when not in use. Tip sheave, attaching brackets and pins included. Deduct 500 pounds (225 kg) from Capacity Chart when boom extension is in the stowed position. Includes trip arm for Anti-Two-Block Device. Boom extension will tilt through three positions: in-line, 15 degree offset and 30 degree offset. Net Weight: 680 pounds (308 kg)

Two-Part Line Sheave Block:

Single sheave block for two-part-line requirements. 10 inch (25 cm) for 9/16 inch (14.3 mm) wire rope. Swivel hook with safety latch. 200 pounds (90 kg) weight provides positive overhaul. Includes bar on top to actuate trip arm of anti-two-block device. Net Weight: 200 pounds (90 kg)

Searcher Hook: (Four-Pin)

5,000 pound capacity hook bracket is attached to the front of the boom tip with four pins through the attachment lugs. A swivel hook with latch is pinned to the tip of the bracket. Net Weight: 65 pounds (29 kg)

Should you require an option or special equipment not listed please consult your dealer salesperson or BMC®.

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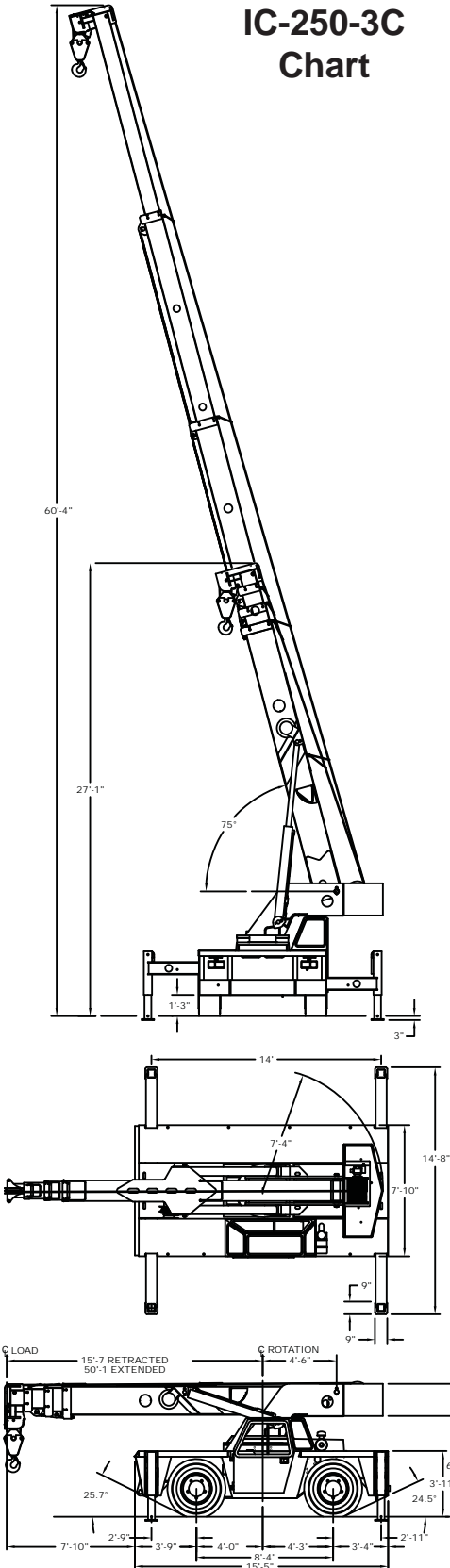
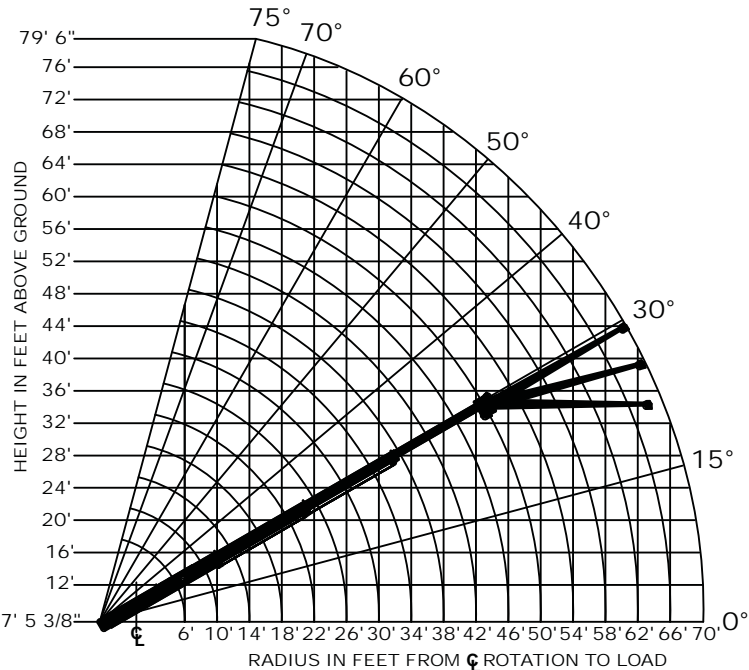
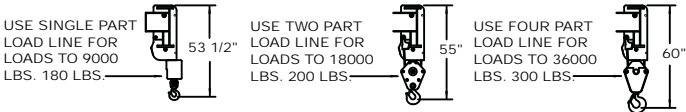
Dimensions and values shown are
for reference purposes only.
Specifications subject to change.



CAPACITIES ARE IN POUNDS AND APPLY TO OPERATION ON FIRM LEVEL SURFACE									
LOAD RADIUS FEET	MAIN BOOM		MAIN BOOM OR BOOM EXTENSION						
	ON RUBBER 360° ROTATION	ON RUBBER OVER FRONT	O/R'S IN & DOWN 360° ROTATION	O/R'S IN & DOWN OVER FRONT	O/R'S OUT & DOWN 360° ROTATION				
6	16400	18500	30000	36000	36000				
8	13000	15000	25050	30400	30400				
10	10800	12350	20300	25000	25000				
12	9000	10450	15500	20800	20800				
14	7550	9000	12000	18700	18700				
16	6450	7800	9700	16700	16700				
18	5600	6850	8150	14900	14900				
20	4800	6100	6900	13500	13500				
22	4150	5400	5900	12100	12100				
24	3600	4650	5000	10900	10900				
26	3100	4000	4200	9850	9850				
28	2700	3500	3600	8950	8950				
30	2350	3050	3050	8200	8200				
32	2000	2650	2650	7500	7500				
34	1750	2300	2300	7150	7000				
38	1300	1750	1750	5950	5650				
42	900	1400	1300	5000	4700				
46	600	1100	1000	4250	4000				
50	350	900	700	3650	3400				
54	---	---	---	---	3550				
58	---	---	---	---	3100				
62	---	---	---	---	2700				
66	---	---	---	---	2350				
70	---	---	---	---	2100				
BOOM EXT. OFFSET ANGLE	20 FOOT BOOM EXTENSION STRUCTURAL CAPACITIES- STRAIGHT OR OFFSET								
	MAIN BOOM ANGLE								
	0°	15°	30°	40°	50°	60°	70°	75°	
	0°	2600	2750	3000	3400	4100	5100	6200	7000
	15°	---	2500	2600	2700	2900	3300	4300	4800
30°	---	---	2300	2400	2500	2700	3200	3400	

CAUTION BOOM EXTENSION LOADS MUST NOT EXCEED MAIN BOOM CAPACITY. BOOM EXTENSION MAY ONLY CARRY LOADS WITH OUTRIGGERS DOWN. CAPACITIES ON OUTRIGGERS OUT & DOWN ARE 85% OF TIPPING LOADS. CAPACITIES ON RUBBER ARE 75% OF TIPPING LOADS. CAPACITIES BELOW BOLD LINE ARE LIMITED BY TIPPING. OTHER CAPACITIES ARE LIMITED BY STRUCTURAL OR HYDRAULIC CAPABILITY.

BOOM EXTENSION DEDUCT: 500 LBS. WHEN STOWED ON BASE

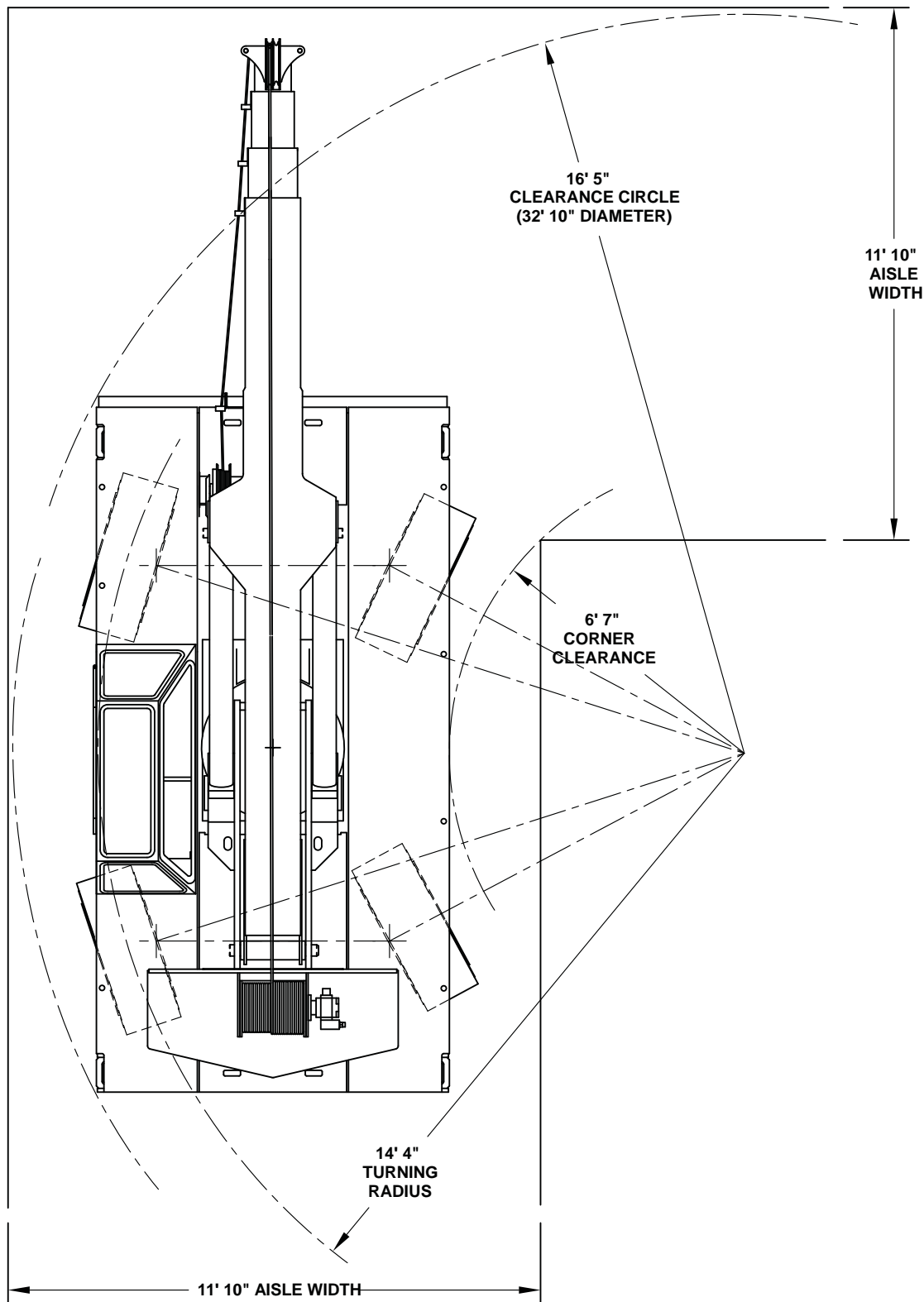




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IC-250-3C Turn Chart

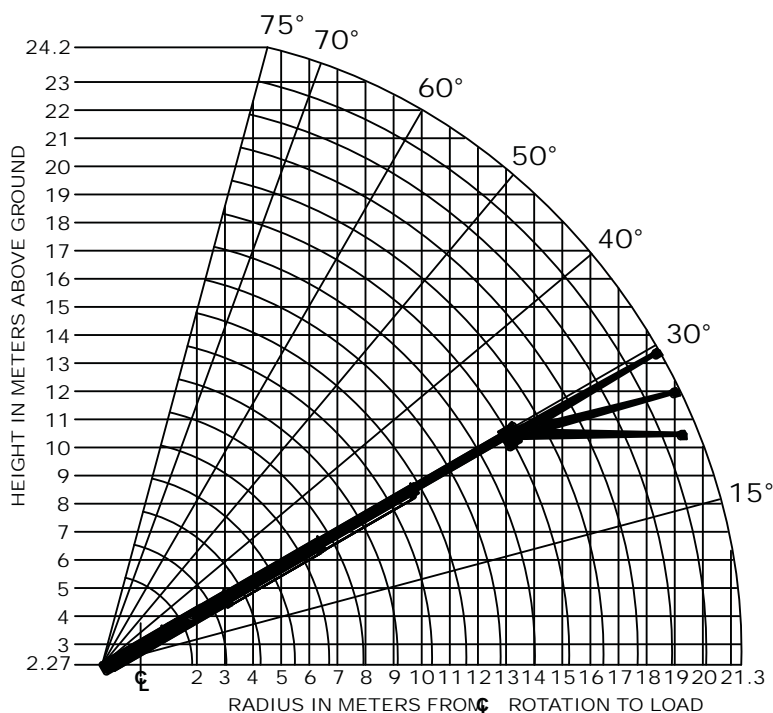
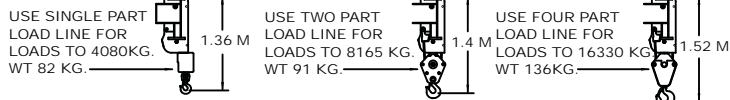




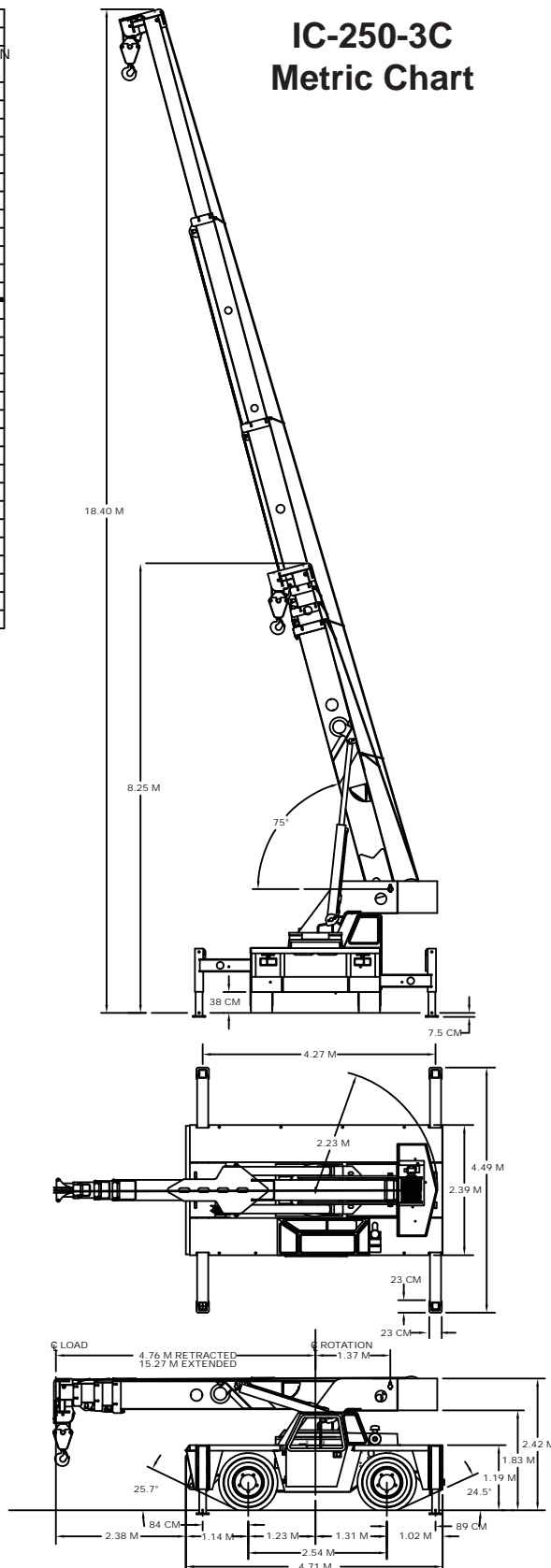
CAPACITIES ARE IN KILOGRAMS AND APPLY TO OPERATION ON FIRM LEVEL SURFACE								
LOAD RADIUS METERS	MAIN BOOM		MAIN BOOM OR BOOM EXTENSION					
	ON RUBBER 360° ROTATION	ON RUBBER OVER FRONT	O/R'S IN & DOWN 360° ROTATION	O/R'S IN & DOWN OVER FRONT	O/R'S OUT & DOWN 360° ROTATION			
1.8	7440	8400	13600	16330	16330			
2.0	6900	7880	12960	15600	15600			
2.5	5790	6680	11140	13540	13540			
3.0	4970	5680	9370	11530	11530			
3.5	4280	4930	7590	9770	9770			
4.0	3690	4350	6050	8890	8890			
4.5	3210	3860	4980	8130	8130			
5.0	2840	3440	4240	7400	7400			
6.0	2230	2820	3210	6220	6220			
7.0	1760	2280	2470	5210	5210			
8.0	1380	1780	1870	4410	4410			
9.0	1100	1430	1440	3800	3800			
10.0	860	1130	1130	3330	3300			
11.0	680	900	900	2960	2850			
12.0	520	730	710	2540	2400			
13.0	380	610	570	2210	2080			
14.0	270	500	500	1930	1820			
15.0	190	420	360	1700	1590			
15.2	160	410	320	1650	1540			
16.0	---	---	---	---	1610			
17.0	---	---	---	---	1520			
18.0	---	---	---	---	1360			
20.0	---	---	---	---	1080			
21.3	---	---	---	---	950			
BOOM EXT. OFFSET ANGLE	6.1M BOOM EXTENSION STRUCTURAL CAPACITIES- STRAIGHT OR OFFSET							
	MAIN BOOM ANGLE							
	0°	15°	30°	40°	50°	60°	70°	75°
	0°	1180	1250	1360	1540	1860	2310	2810
15°	—	1130	1180	1220	1310	1490	1950	2180
30°	—	—	1040	1090	1130	1220	1450	1540

CAUTION BOOM EXTENSION LOADS MUST NOT EXCEED MAIN BOOM CAPACITY. BOOM EXTENSION MAY ONLY CARRY LOADS WITH OUTRIGGERS DOWN. CAPACITIES ON OUTRIGGERS ARE 85% OF TIPPING LOADS. CAPACITIES ON RUBBER ARE 75% OF TIPPING LOADS. CAPACITIES BELOW BOLD LINE ARE LIMITED BY TIPPING. OTHER CAPACITIES ARE LIMITED BY STRUCTURAL OR HYDRAULIC CAPABILITY.

BOOM EXTENSION DEDUCT: 225 kg WHEN STOWED ON BOOM



IC-250-3C Metric Chart



**IC-250-3C
Metric Turn Chart**