

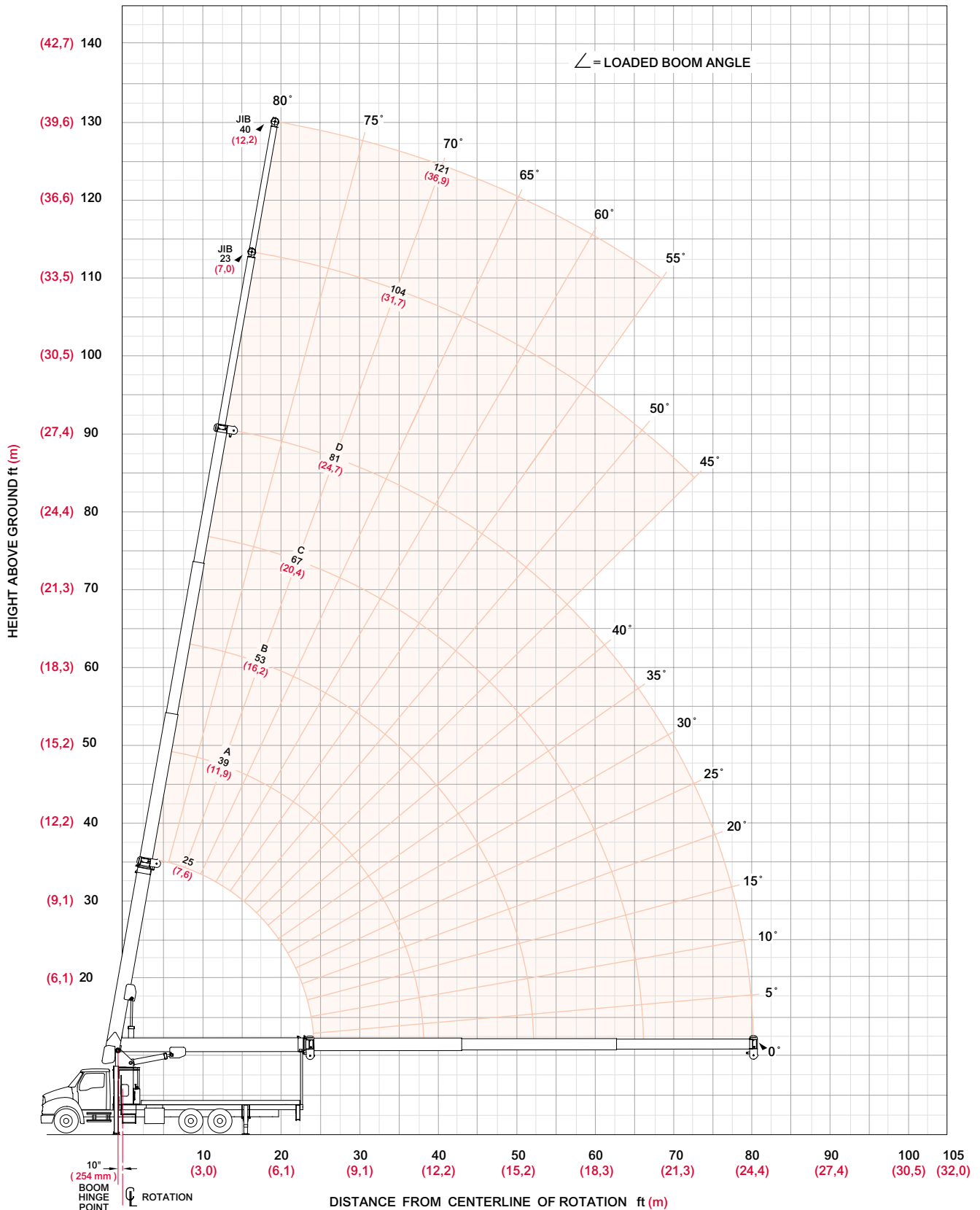


LIFTING CHARTS - Boom Trucks

MANITOWOC MODEL 1781C - 17 TON CAPACITY

boom/jib range diagram

1781C Range Diagram



boom/jib load charts

1781C Load Ratings

Boom ft (m)	A		B		C		D		
	25 (7,6)	39 (11,9)	53 (16,2)	67 (20,4)	81 (24,7)				
Operating Radius ft (m)	∠	lb (kg)	∠	lb (kg)	∠	lb (kg)	∠	lb (kg)	
5 (1,5)	78°	34,000 (15 422)							
10 (3,1)	66°	18,700 (8 482)	76°	16,200 (7 348)					
15 (4,6)	52°	13,010 (5 901)	68°	11,640 (5 280)	74°	10,900 (4 944)	78°	10,150 (4 604)	
20 (6,1)	34°	9,790 (4 441)	59°	8,950 (4 060)	68°	8,280 (3 756)	74°	7,610 (3 452)	
25 (7,6)			50°	7,210 (3 270)	62°	6,640 (3 012)	69°	6,030 (2 735)	
30 (9,1)			39°	5,900 (2 676)	56°	5,490 (2 490)	65°	4,950 (2 245)	
35 (10,7)			25°	4,674 (2 120)	49°	4,620 (2 096)	60°	4,150 (1 882)	
40 (12,2)					41°	3,910 (1 774)	55°	3,530 (1 601)	
45 (13,7)					32°	3,240 (1 470)	49°	3,020 (1 370)	
50 (15,2)					18°	2,500 (1 134)	43°	2,580 (1 170)	
55 (16,8)							36°	2,180 (989)	
60 (18,3)							27°	1,770 (803)	
65 (19,8)							13°	1,190 (540)	
70 (21,3)								32°	1,240 (562)
75 (22,9)								24°	940 (426)
Deduction*		270 (122)	170 (77)	130 (59)	100 (45)	80 (36)			
Deduction**		420 (191)	270 (122)	200 (91)	160 (73)	130 (59)			

1781C Jib Load Ratings

Jib ft (m)	Fixed Jib		Telescopic Jib		
	23 (7,0)	23 (7,0)	40 (12,2)	40 (12,2)	
∠	lb (kg)	∠	lb (kg)	∠	lb (kg)
80°	3,300 (1 497)	80°	3,200 (1 451)	80°	2,000 (907)
75°	2,700 (1 225)	75°	2,600 (1 179)	75°	1,600 (726)
70°	2,200 (998)	70°	2,100 (953)	70°	1,200 (544)
65°	1,700 (771)	65°	1,600 (726)	65°	950 (431)
60°	1,300 (590)	60°	1,200 (544)	60°	700 (318)
55°	1,000 (454)	55°	900 (408)	55°	550 (249)
50°	800 (363)	50°	700 (318)		
45°	650 (295)	45°	550 (249)		

*for stowed fixed jib

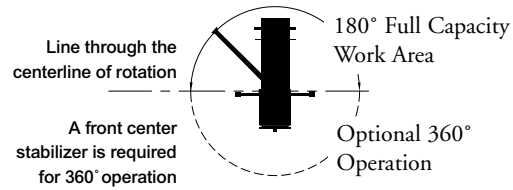
**for stowed telescopic jib

load chart data

Deductions

Load Block	See manufacturer's nameplate
Overhaul Ball	See manufacturer's nameplate
Telescopic Jib (stowed)	See load rating chart
Hose Reel	160 lb (73 kg)

Area of Operation



Allowable Line Pull

1 Part Line	2 Part Line	3 Part Line	4 Part Line
8,500 lb (3 856 kg)	17,000 lb (7 711 kg)	25,500 lb (11 567 kg)	34,000 lb (15 422 kg)
7,400 lb (3 357 kg)	14,800 lb (6 713 kg)	22,200 lb (10 070 kg)	29,600 lb (13 427 kg)

9/16" 6 x 37 IWRC (3.5:1 SF) – 29,800 lb Min Breaking Strength
 9/16" Rotation Resistant (5.0:1 SF) – 37,000 lb Min Breaking Strength

Warning

Anti-two-block system must be in good operating condition before operating crane. Refer to the owner's manual. Keep at least five wraps of load line on the drum at all times.

specifications

Upperworks

Boom

Booms – Inverted top hat cross-section, 3- or 4-Section telescoping type extended and retracted proportionally by a double-acting hydraulic cylinder and cable system. **1761C** – 3-section 24' 5" (7,4 m) to 61' 5" (18,7 m). Maximum tip height 72' 5" (22,1 m). **1770C** – 3-Section 27' 3-1/2" (8,3 m) to 70' 0" (21,3 m). Maximum tip height 80' 10" (24,6 m). 2-section, 23' (7,0 m) to 40' (12,2 m) jib. Maximum tip height 120' 6" (36,7 m). **1781C** – 4-section 24' 6" (7,5 m) to 81' 0" (24,7 m). Maximum tip height 91' 9" (28,0 m).

Boom Points – Three non-metallic sheaves mounted on bronze bushings. The idler sheave is a moveable sheave assembly. The boom nose contains an integral bushing for installation of an optional personal platform. Each sheave assembly contains an external grease fitting.

Boom Elevation – Double-acting hydraulic cylinder. Working range from 8° below horizontal to 80° above.

Load Hook – 5-ton capacity hook with heavy-duty swivel and weight is provided for single-line operation.

Hoist

Hoist – Maximum theoretical line speed 304 fpm (92,7 mpm). Maximum theoretical bare drum line-pull 10,500 lb (4 763 kg). Two-speed planetary reducer. Spring-applied, pressure-released internal brake. Wet multi-disc internal brake is spring applied, pressure released. The winch drum is grooved to assist in cable spooling. The lay-away hoist is mounted to the back of the boom assembly.

Wire Rope – For 70' (21,3 m) and 81' (24,7 m) booms, 300' (91,4 m) of 9/16" (14,3 mm) diameter 6 x 37 EIPS IWRC right regular lay. 61' (18,6 m) boom is equipped with 244' (74,4 m) of rope.

Swing System

Externally mounted, double-reduction planetary driven by hydraulic motor. Maximum theoretical swing speed 1.5 rpm. Wet multi-disc internal brake is spring applied, pressure released. Oversized diameter ball bearing swing circle with external gear. 372° non-continuous rotation.

Outriggers

20' 10" (6,1 m) Extended. A-frame link type. Operated independently for precise leveling. Equipped with double-acting hydraulic cylinders. 11-1/2" (292 mm) x 15-5/8" (397 mm) pivoting pads with 7-9/10" (201 mm) ground penetration on a 39" (991 mm) high truck frame.

Mounting

Mounting – Pedestal and subframe are mounted to chassis by threaded rods and clamp plates. No welding, drilling, or bolting to truck frame required.

A-Frame Stabilizers – 8' (2,4 m) retracted; 10' (3,1 m) extended. Operated independently for precise leveling. Double-acting hydraulic cylinders. Fixed pad size is 10-3/4" (273mm) x 11-1/2" (292 mm) with flared leading edge.

Subframe – Torsionally resistant, rigid 4-plate design, mounted under crane full length of truck frame.

Rear Underride Protection – Supplied on factory-mounted cranes. Fabricated structure mounted under rear of bed.

Boom Rest – Heavy-duty fabrication. Easily removed to simplify loading and unloading truck deck.

Control System

Dual operator stations are equipped with four single-lever crane controls arranged to ANSI B30.5 Standards. Fully proportional control valves. A system pressure gauge and radio anti-two-block control box are mounted on the driver's side console only. Each station includes individual control levers for each outrigger and stabilizer for precise leveling. These control levers are offset and shorter than the main crane controls for added safety. Both control stations are equipped with engine start/stop, foot throttle, signal horn, boom angle indicator, bubble level, lifting capacity chart, and range diagram.

Hydraulics

Hydraulic System – 3-section gear pump direct-mounted to power take-off, on manual shift truck transmissions, provides 39 gpm (148 lpm) to the hoist, 9 gpm (34 lpm) to swing circuit and 24 gpm (91 lpm) to the remaining crane functions. A 70-gallon (265-liter) baffled reservoir includes a 25-micron return line filter and magnetic plug. A single gate valve on the suction line from the tank to pump. Extensive use of SAE O-ring face seal hydraulic fittings where possible.

Hydraulic Cylinders – All load-holding cylinders are equipped with integral holding valves.


Warning Systems

Hydraulic Capacity Alert System (HYCAS) – Hydraulically senses boom hoist cylinder pressures and indicates an overload condition. Includes hydraulic function lockout as standard.

specifications

Radio Anti-Two-Block System – Audible warning and visual display on driver's side console. Shutoff functions prevent hook from contacting boom point.

Back-Up Alarm – Supplied on factory-mounted cranes, electronic audible motion alarm activated when truck transmission is in reverse gear.



General

Electrical – 12-volt direct current. Environmentally sealed enclosure contains accessory circuit, terminal strips, and relays. In-line fuse will be supplied.

Design/Welding – Design conforms to ANSI B30.5. Welding conforms to AWS D1.1. Tested to SAE 1063 and SAE 765.

Manuals – Operator, service and parts manuals depict correct crane operation, maintenance procedures, and parts listing.

Warranty – 12-month warranty covers parts and labor resulting from defects in material or workmanship.

Warning

1. The operator must read and understand the owner's manual before operating this crane.
2. Positioning or operation of crane beyond areas shown on this capacity chart is not intended except where specified in owner's manual.
3. Loaded boom angles at specified boom lengths give only an approximation of the operating radius. The boom angle before loading should be greater to account for deflections. Do not exceed the operating radius for rated loads.
4. Jib rating chart is based on loaded boom angles of main boom and not on load radius.
5. Boom must be fully retracted when jib is erected, before lowering boom thru restricted area shown on the range diagrams.
6. For boom angles not shown on jib load rating chart, use rating of next lower boom angle.
7. For boom lengths not shown, use next longer boom length. For radii not shown, use rating of next longer radius.
8. Crane load ratings on outriggers are based on freely suspended loads with the machine leveled and standing on a firm uniform supporting surface. No attempt shall be made to move a load horizontally on the ground in any direction.
9. Practical working loads depend on supporting surface, wind, and other factors affecting stability such

as hazardous surroundings, experience of personnel, and proper handling, all of which must be taken into account by the operator.

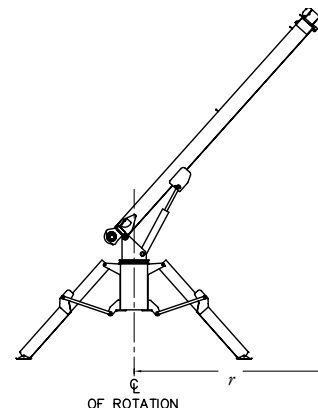
10. The maximum load which may be telescoped is limited by hydraulic pressure, boom angle, and boom lubrication. It is safe to attempt to telescope any load within the limits of the load rating chart. Boom must be fully retracted against boom stops at all times when lifting minimum boom length capacity loads.

Information

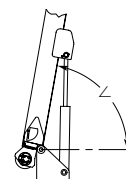
1. Deductions must be made from rated loads for stowed jib, optional attachments, hooks, and loadblocks (see deduction chart). Weights of slings and all other load-handling devices shall be considered a part of the load.
2. Crane load ratings with outriggers are based on outriggers and stabilizers extended and set with machine leveled.
3. Load ratings above the heavy line are structurally limited capacities and do not exceed 85% of tipping. Load ratings below the heavy line are limited by stability and do not exceed 85% of tipping.

Definitions

1. Operating radius (r) is the horizontal distance from the axis of rotation to the center of the vertical hoist line or tackle with load applied (see below).

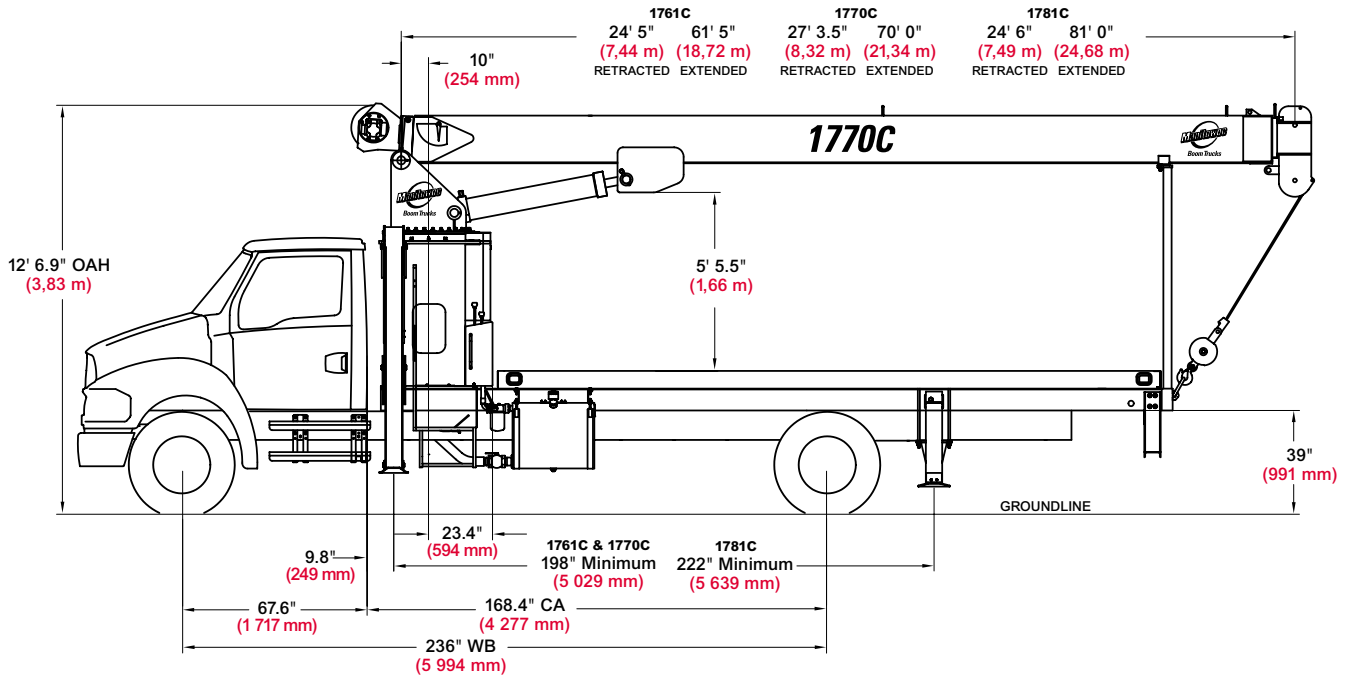


2. Loaded boom angle (\angle), as shown in the load chart columns headed by \angle , is the included angle between the horizontal and longitudinal axes of the boom base after lifting rated load at rated radius (see below).



STERLING CRANE

outline dimensions



Chassis Data

Minimum Truck Requirements	1761C	1770C	1781C
Wheelbase (WB)	236" (5 994 mm)	236" (5 994 mm)	236" (5 994 mm)
Cab to Axle (CA)	168" (4 267 mm)	168" (4 267 mm)	168" (4 267 mm)
After Frame (AF)	90" (2 286 mm)	90" (2 286 mm)	90" (2 286 mm)
Frame Section Modulus	15.9 in³ 110,000 psi (758 422 kPa)	15.9 in³ 110,000 psi (758 422 kPa)	15.9 in³ 110,000 psi (758 422 kPa)
Front Axle Gross Weight Rating	12,000 lb (5 443 kg)	12,000 lb (5 443 kg)	16,000 lb (7 257 kg)
Rear Axle Gross Weight Rating	21,000 lb (9 525 kg)	21,000 lb (9 525 kg)	34,000 lb (15 422 kg)
Truck Axle Weight - Front*	5,700 lb (2 585 kg)	5,700 lb (2 585 kg)	6,500 lb (2 948 kg)
Truck Axle Weight - Back*	3,900 lb (1 769 kg)	3,900 lb (1 769 kg)	6,500 lb (2 948 kg)
Nominal Frame Width	34 - 35" (864 - 889 mm)	34 - 35" (864 - 889 mm)	34 - 35" (864 - 889 mm)

*Minimum chassis weight is required to meet 85% stability requirements.

Chassis data is general – not for engineering. Some dimensions depend on truck selection.

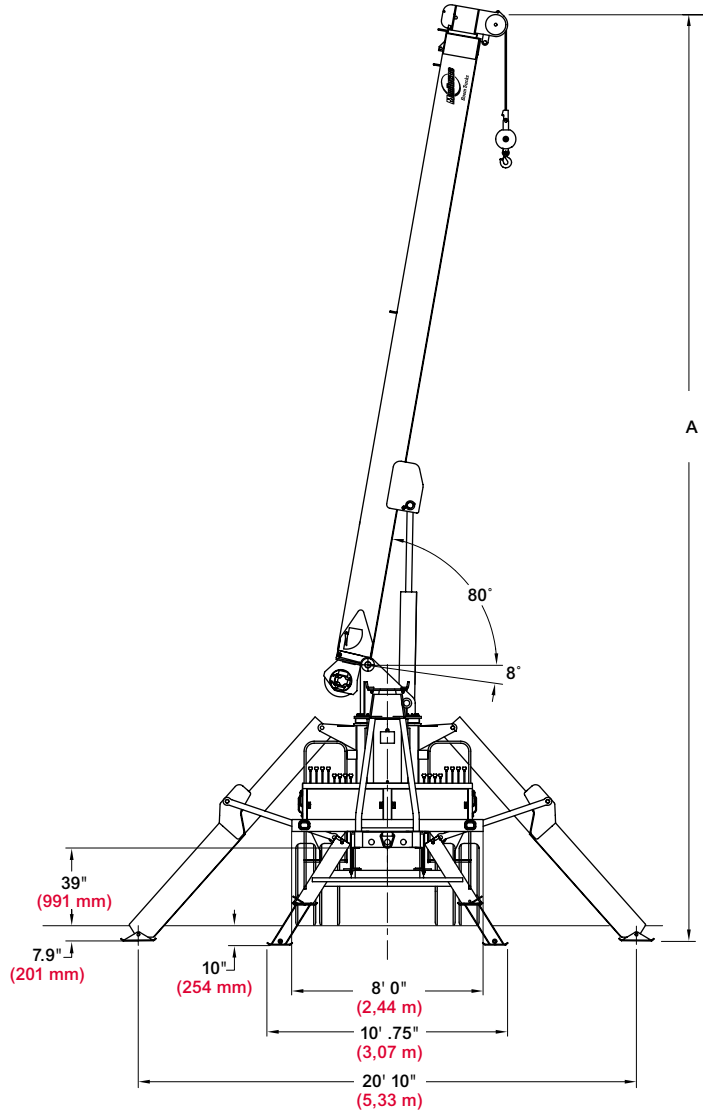
OAH Overall Height
 CT Cab to Tandem
 CA Cab to Axle
 WB Wheel Base
 BBC Bumper to Back of Cab
 AF Afterframe

Weights

	1761C	1770C	1781C
Total Crane	14,698 lb (6 667 kg)	15,098 lb (6 848 kg)	16,798 lb (7 619 kg)
1 Piece 23' (7,01 m)	480 lb (218 kg)	480 lb (218 kg)	480 lb (218 kg)
2 Piece 23' - 40' (7,01 - 12,19 m)	760 lb (345 kg)	760 lb (345 kg)	760 lb (345 kg)
20' (6,1 m) Steel Bed	1,720 lb (780 kg)	1,720 lb (780 kg)	1,720 lb (780 kg)
20' (6,1 m) Wood Bed	1,800 lb (817 kg)	1,800 lb (817 kg)	1,800 lb (817 kg)

STERLING CRANE

outline dimensions



Maximum Tip Height (A)

Configuration	1761C	1770C	1781C
	Boom 61' 0" (18,6 m)	Boom 70' 0" (21,3 m)	Boom 81' 0" (24,7 m)
Retracted	35' 12" (11,0 m)	38' 10" (11,8 m)	36' 0" (11,0 m)
Extended	72' 5" (22,1 m)	80' 10" (24,6 m)	91' 9" (28,0 m)
Fixed or Retracted Jib	95' 4" (29,1 m)	103' 9" (31,6 m)	114' 8" (35,0 m)
Extended Jib	112' 1" (34,2 m)	120' 6" (36,7 m)	131' 5" (40,1 m)