Grove Manitowoc National Crane Potain

Manitowoc 31000

Product Guide

ASME B30.5
Metric / Imperial

Features

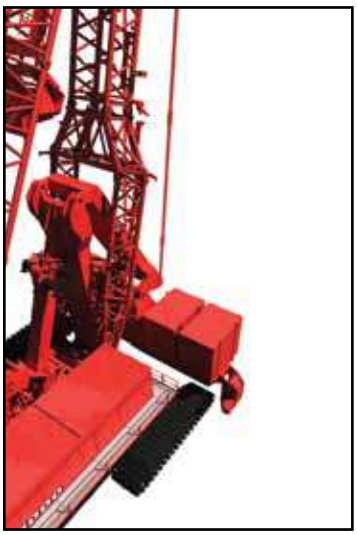
- 2 300 t (2,535 USt)* main boom
- 1 400 t (1,543 USt) fixed jib
- 1 100 t (1,212 USt) luffing jib
- 35 800 mton-m (258,940 ft-kips) maximum load moment
- Variable Position Counterweight U.S. Patent 7,546,928

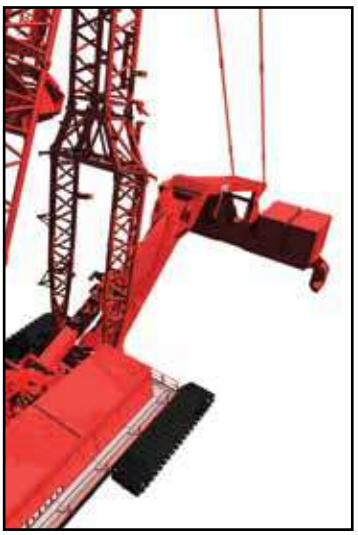
*Special equipment required

Features

Variable Position Counterweight (VPC)
U.S. Patent 7,546,928

The Manitowoc 31000 features the only self-supporting counterweight system in the industry. By suspending the counterweights above the ground, site preparation is greatly reduced. As load increases on the hook, the VPC is automatically repositioned to maintain a balanced load moment.





CraneSTAR

CraneSTAR is an exclusive and innovative crane asset management system that helps improve your profitability and reduce costs by remotely monitoring critical crane data. Visit www.cranestar.com for more information.

Power plant
Two 447 kW (600 hp) Cummins diesel engines deliver power.

Crawlers
Four independent, trunnion mounted crawlers.

Transportation
The Manitowoc 31000 is designed to be efficiently transported globally.

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Specifications

Upperworks

Engine

Two 447 kW (600 hp) Cummins QSX15 in-line six cylinder diesel engines, compliant to US EPA Tier 3, CARB Tier 3, and EU Stage IIIA emissions regulations.

Two independent main diesel engine power plants, operator's cab, and auxiliary electrical system are integrated into an easily transportable package.

Power is transmitted from each diesel engine to the hydraulic system through an automotive style clutch coupled to a four pad pump drive gearbox.

A 2 270 L (600 gal) diesel fuel tank is equipped with both a splash - type fill and fast fill. Level indication is displayed in the operator's cab.

A 240 VAC, 60 Hz, single phase, hydraulically driven auxiliary generator provides primary electrical power for the operator's cab heating and air conditioning and general crane area lighting.

A 240 volt, 60 Hz, single phase, diesel engine driven standby generator is provided.

Fully automated fire suppression system is provided standard.

- Optional: 240 VAC, 50 Hz, single phase, hydraulically driven auxiliary generator.
- Optional: 240 VAC, 50 Hz, single phase, diesel engine driven standby generator.

Controls

Modulating electronic over hydraulic controls provide infinite speed response directly proportional to the operator's control lever movement. Controls include Manitowoc's exclusive EPIC® Electronically Processed Independent Control system with CANBus technology providing microprocessor driven control logic, variable displacement pump and motor control, on-board diagnostics, and service information.

Block up limit control is provided for load hoist and whip lines.

The integrated Rated Capacity Limiter (RCL) is provided for main boom. The RCL for the extended upper boom point, luffing jib, and fixed jib is provided with each of these optional configurations.

Travel, swing and VPC alarms are standard.

Hydraulic system

High-pressure variable displacement piston pumps, driven by two (one per engine) multi-pump transmissions, provide independent closed-loop hydraulic power for load hoist drums, boom hoist, VPC, swing, crawlers, and optional luffing hoist.

Accessory hydraulic power, for actuation of cylinders and powered pins, is provided by two variable displacement piston pumps. It is also shared with the crawler drive.

Hydraulic reservoir capacity is 1 741 L (460 gal) and is equipped with breather, sight and electrical level indicator, clean out access, and internal diffusers.

Each function is equipped with relief valves to protect the circuit from overload or shock.

Replaceable, ten micron (absolute) full flow tank filters are standard. All hydraulic fluid is filtered prior to returning to the reservoir.

The hydraulic system includes a hydraulic fluid heat exchanger designed for high cooling during ambient temperature operation.

Drums

The basic crane is equipped with two independent load hoist drums. Each drum is 1 785 mm (70-1/4") wide, 1 118 mm (44") diameter, and grooved for 50 mm wire rope.

Power is provided by four variable displacement axial piston motors driving two planetary reduction gearboxes. Each motor is coupled to its mating gearbox through a spring applied, hydraulically released wet multi-disc brake.

Standard line pull is 490 kN (110,230 lb).

Maximum main load drum line speed of 139 m/min (456 fpm) on the eighth layer.

Drum rotation indicator, third wrap indicator (bail limit), and pressure rollers are standard for each drum.

- Optional: Third load hoist drum.

Maximum auxiliary/whip drum line speed of 117 m/min (383 fpm) on the fifth layer.

Boom hoist system

An independent boom hoist drum, constructed with a common barrel divided equally by a center flange, is driven by four variable displacement axial piston motors through two planetary reduction gearboxes. Each motor is coupled to the mating gearbox through a spring applied, hydraulically released wet multi-disc brake.

The drum is grooved for 34 mm wire rope, continuously reeved with 28 parts of boom hoist line.

Swing system

Eight swing drives are utilized. Each is powered by a fixed displacement axial piston motor coupled to a planetary reduction gearbox. The motor is connected to the mating gearbox through a spring applied, hydraulically released wet multi-disc brake and mechanical disconnect.

Four swing drives (two on each side) are mounted to each of the front and rear roller carriers. Each drive is equipped with a swing pinion aligning directly with ring gear teeth for optimum control and smooth swing.

Swing system maximum speed: 0.50 rpm.

Variable Position Counterweight

The patented Variable Position Counterweight (VPC) system maintains an optimum crane load moment by automatically positioning crane counterweight between the fully retracted position of 8,38 m (27' 6") and fully extended position of 29,0 m (95' 1").

The crane is equipped with a maximum 964 t (2,126,000 lb) of counterweight comprised of a 3-piece counterweight tray and forty-two 20 t (44,000 lb) counterweight boxes.

No carbody counterweight is necessary because of exclusive VPC technology.

- Optional: Cast iron counterweight boxes.

Operator's cab

The operator's cab is a fully enclosed and insulated steel module integral with the engine enclosure. Cab and engine enclosure are mounted on the left side of the rotating bed. Standard equipment includes; two 10.4" RCL and crane function displays, drum rotation indicators, travel cruise control, swing and travel alarms, RCL tower indicator light, sliding entry door, large safety glass windows, aluminum window covers, window washers and wipers, side mirrors, fire extinguisher, 6-way power seat with heat and massage, tablet-style personal computer with mounting bracket, one-way loud hailer/speaker, 240 VAC air conditioner, 240 VAC heater, defroster fans, dome lights, aluminum storage cabinets, fold-down jump seat, and AM/FM radio with CD player.

The operator's station, including operator's seat and crane controls, tilt up to 20°.

Seven closed circuit cameras provided; one to observe each of the two main load hoist drums, boom hoist drum, rigging assist drum, VPC, to view the load from the boom top, and the interior of the power plant enclosure. Camera information is displayed on two 10" and three 7" color monitors.

- Optional: One closed circuit camera to view the third load hoist drum.
- Optional: One closed circuit camera to view the luffing hoist drum.

Lowerworks

Carbody

The five-section, high strength welded steel carbody is comprised of two front/rear beams, two side beams, and a center beam with integral kingpin. The carbody beams are FACT™ connected and all pins hydraulically inserted.

Eight hydraulic jacking cylinders, four mounted to each side carbody beam, are provided to assist in crane assembly/disassembly.

Roller path and ring gear
Integrated into the carbody beams is a precision machined 12,19 m (40') outside diameter roller path, protected by replaceable high strength steel wear plates.

Precision machined ring gear segments are mounted internal to the roller path to provide precise swing.

Crawlers

The four trunnion mounted crawler assemblies are 8,67 m (28' 5") long and outfitted with forty-two 2,03 m (80") wide cast steel track pads. The trunnion

Specifications

mounted design ensures uniform load distribution over the length of each crawler.

Each crawler assembly is hydraulically driven by two variable displacement motors through two planetary reduction gearboxes, one on each end of the crawler frame. Each motor is coupled to the mating gearbox through a spring applied, hydraulically released wet multi-disk brake.

Crawler drives enable travel and counter-rotation under full rated loads. Maximum travel speed is 0,60 km/h (0.37 mph).

Ground bearing pressure

The maximum ground bearing pressure under the crawlers with the boom positioned over the front of the crane:

No hook load:
Soft: 551,5 kPa (80 psi / 11,520 psf)
Hard: 848,1 kPa (123 psi / 17,712 psf)

With load:
Soft: 834,3 kPa (121 psi / 17,424 psf)
Hard: 1 282,4 kPa (186 psi / 26,784 psf)

At critical swing angle:
Soft: 910,1 kPa (132 psi / 19,008 psf)
Hard: 1 392,7 kPa (202 psi / 29,088 psf)

Attachments

No. 90 heavy-lift boom

The lift crane is equipped with 55 m (180' 5") No. 90 tubular chord boom consisting of a 7,0 m (23') butt, one 10 m (32' 10") insert with wire rope guide, two 10 m (32' 10") inserts without boom straps, one 10 m (32' 10") insert with equalizer platform, an 8 m (26' 3") top, and two lower boom point assemblies each with twelve 1 321 mm (52") diameter roller bearing sheaves grooved for 50 mm diameter wire rope. Includes wire rope guides, boom hoist wire rope, and boom angle indicators.

The No. 90 boom utilizes steel suspension straps and Manitowoc's exclusive FACT boom connectors. Hydraulic boom stops. Powered boom hinge pins are standard.

Luffing jib preparation included as standard.

- Optional: One 5 m (16' 5") No. 90 boom insert with steel suspension straps and FACT connection system.
- Optional: 10 m (32' 10") No. 90 boom inserts with steel suspension straps and FACT connection system.
- Optional: 200 t (220 USt) detachable upper boom point with two 1 321 mm (52") diameter roller bearing sheaves grooved for 50 mm diameter wire rope.

Utilize optional boom inserts in combination with the No. 90 basic boom for total lengths up to 110 m (361').

No. 91 fixed jib

- Optional: Components to make up 24 m (78' 8") of basic fixed jib which includes a 10 m (32' 10") No. 91 butt, 6 m (19' 8") No. 91 insert, an 8 m (26' 3") No. 91 top, wire rope guides, jib strut, basic fixed jib steel suspension straps, and FACT connection system.
- Optional: 6 m (19' 8") No. 91 and 12 m (39'4") No. 91 inserts with steel suspension straps and FACT connection system.
- Optional: 200 t (220 USt) detachable upper boom point with two 1 321 mm (52") diameter roller bearing sheaves grooved for 50 mm diameter wire rope.

Utilize the optional fixed jib inserts in combination with the No. 91 basic fixed jib for total lengths up to 42 m (137' 10").

Utilize one boom raising dolly for fixed jib raising.

Note: The fixed jib uses one lower boom point assembly from the No. 90 boom.

No. 91 luffing jib

- Optional: Components to make up 36 m (118' 1") of basic luffing jib includes a 10 m (32' 10") No. 91 butt, 6 m (19' 8") No. 91 insert, 12 m (39' 4") No. 91 insert, an 8 m (26' 3") No. 91 top, jib strut, main strut, main strut jib stop, luffing jib stop, basic luffing jib steel suspension straps,

luffing jib raising beam, luffing drum assembly, 34 mm luffing hoist wire rope, and wire rope guides.

- Optional: 6 m (19' 8") No. 91 and 12 m (39' 4") No. 91 inserts with steel suspension straps and FACT connection system.
- Optional: 200 t (220 USt) detachable upper boom point with two 1 321 mm (52") diameter roller bearing sheaves grooved for 50 mm diameter wire rope.

Utilize the optional luffing jib inserts in combination with the No. 91 basic luffing jib for total lengths up to 114 m (374').

Note: The luffing jib uses one lower point assembly from the No. 90 boom.

Note: Configure the two boom raising dollies (see assembly equipment) together with the luffing jib raising beam, creating a single assembly used for luffing jib raising.

No. 90-91 long reach boom

- Optional: 10 m (32' 10") No. 90 transition insert with steel suspension straps and FACT connection system.
- Optional: 8 m (26' 3") No. 91 jib top with steel suspension straps and FACT connection system.
- Optional: One 6 m (19' 8") No. 91 insert with steel suspension straps and FACT connection system.
- Optional: One 12 m (39' 4") No. 91 insert with steel suspension straps and FACT connection system.
- Optional: 200 t (220 USt) detachable upper boom point with two 1 321 mm (52") diameter roller bearing sheaves grooved for 50 mm diameter wire rope.

Utilize the optional No. 90 transition insert and No. 91 jib inserts and top in combination with the No. 90 boom for total lengths up to 138 m (452' 10").

Note: The combination boom uses one lower point assembly from the No. 90 boom.

Note: Utilize one boom raising dolly (see assembly equipment) for fixed jib raising.

Assembly equipment

Two boom raising dollies provided standard for mast/backhitch raising.

Portable diesel / hydraulic power unit; trailer mounted, 12 volt system power, two independent 207 bar (3,000 psi) hydraulic circuits providing power through two hose reels. An assembly assist tool kit, consisting of two hand-held hydraulic cylinders for driving boom pins, a manually actuated hydraulic valve for remote cylinder operation and two boom rigging stands is provided. Also, included is a hand operated winch to assist with connection of boom suspension straps.

Rigging kit consisting of lifting slings and chains, snatch block, load line reeving assist components, and crawler track handling bracket provided standard.

Optional equipment

- Blocks and hooks.

  50 t (55 USt) swivel hook and weight ball and single hook with hook latch, weighing 5 000 kg (11,023 lb).

  200 t (220 USt) hook block with three 1 310 mm (51.6") diameter roller bearing sheaves grooved for 50 mm diameter wire rope, duplex swivel hook with hook latches, 90° swivel lock, and 250 t (275 USt) rated shackle hole, weighing 3 300 kg (7,275 lb).

  Note: Supplied with a 4 400 kg (9,700 lb) weight kit for a total hook block weight of 7 700 kg (16,976 lb).

  2 000 t (2,205 USt) modular hook block assembly with twenty-two 1 310 mm (51.6") diameter roller bearing sheaves; grooved for 50 mm diameter wire rope and grouped into six block assemblies, two 1 000 t (1,102 USt) rated duplex hooks with hook latches (one hook provided with 90° swivel lock) and 1 250 t (1,378 USt) rated shackle holes. Total weight of 55 t (60 USt).

  Note: The 2 000 t (2,205 USt) rated hook block can be reconfigured into 1 400 t (1,543 USt), 1 200 t (1,323 USt), 1 000 t (1,102 USt), 600 t (661 USt), and 500 t (551 USt) rated hook block assemblies from the supplied parts.

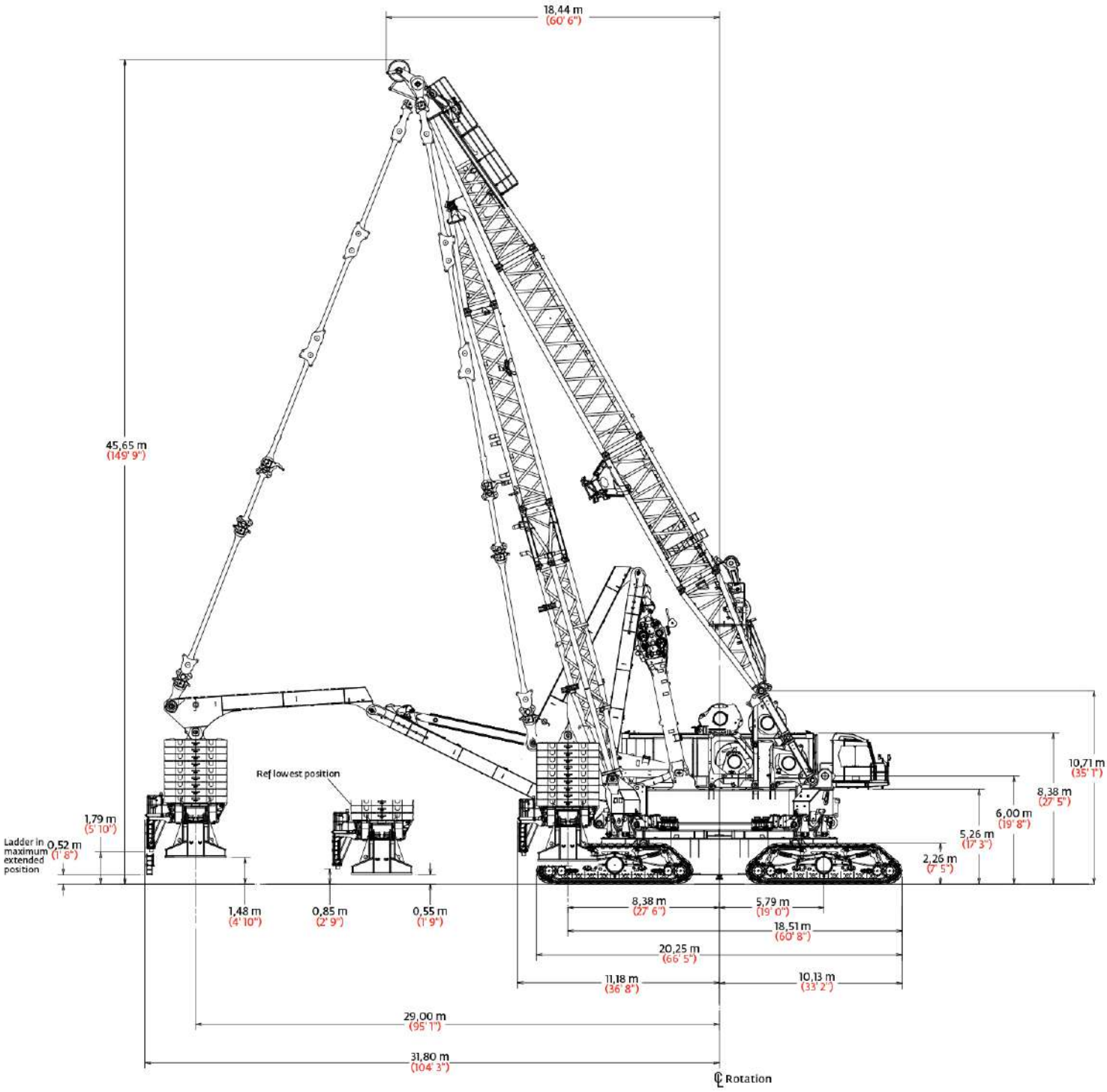
  Note: Supplied with a five piece shackle kit; 2 t (2.2 USt), 9,5 t (10.5 USt), 12 t (13.2 USt), 35 t (38.6 USt), and 85 t (93.7 USt).

Specifications

500 t (551 USt) rated link plates, when combined with one 5-sheave block and a 1 000 t (1,102 USt) duplex hook (with 90° swivel lock) from the 2 000 t (2,205 USt) modular hook block assembly, provides a compact 500 t (551 USt) rated hook block configuration for use during two hook operation. Weight of link components 12 t (13.2 USt) for a total assembled 500 t (551 USt) rated hook block weight of 22 t (24.3 USt).

- 250 t (275 USt) rated wide body shackle assembly.
- 1 250 t (1,378 USt) rated wide body shackle assembly.
- Hydraulic Test Kit.
- Service Interval Kits.
- Lighting package(s), consult factory for available options.
- Special Paint Color (other than Manitowoc standard red and black.)
- Special Customer Decals: custom vinyl decal(s) of name and/or logo from artwork supplied by customer.
- Export Packaging: basic crane, boom and jib sections.

Outline dimensions



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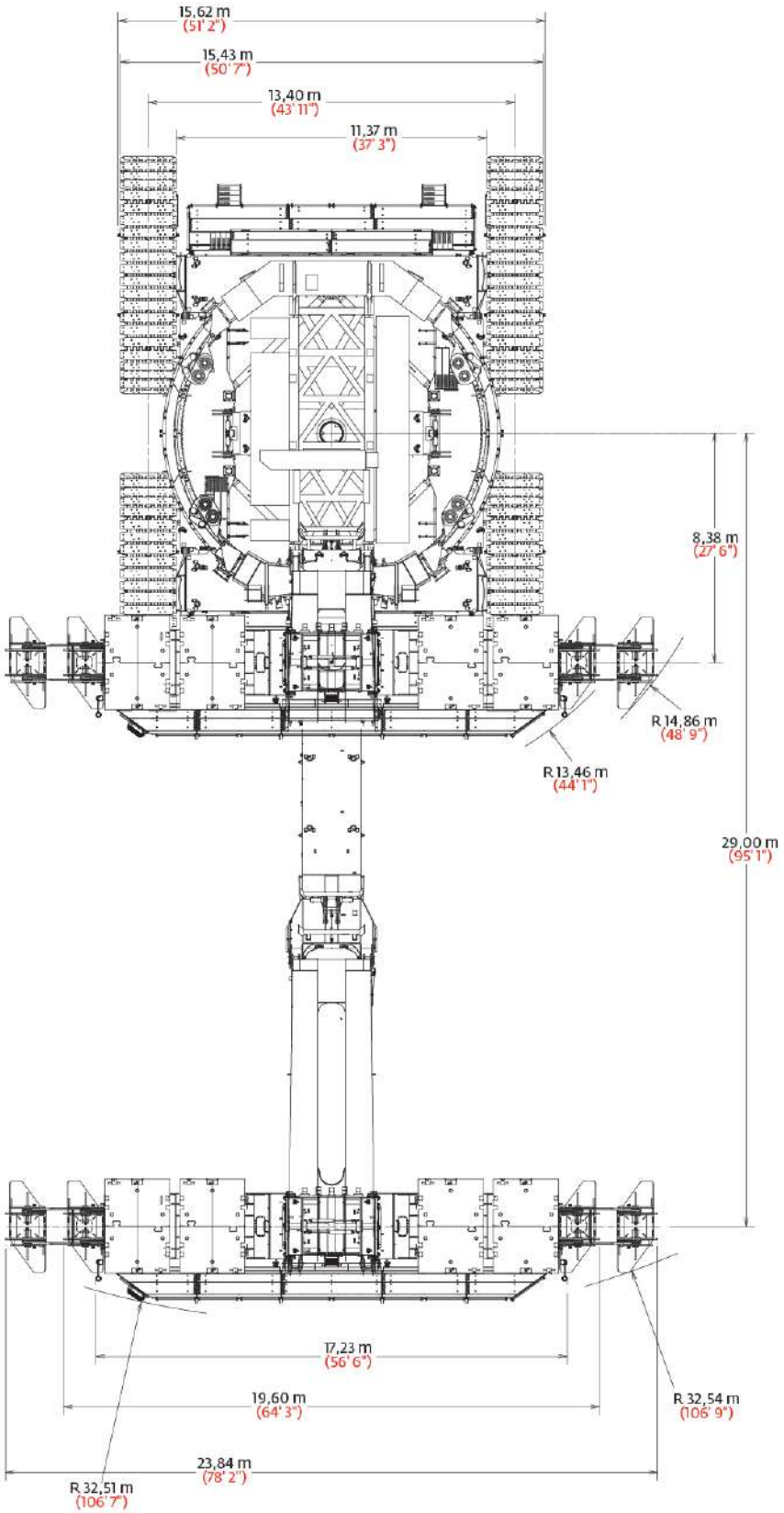

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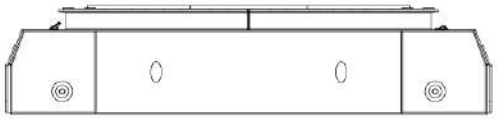
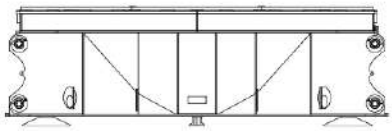


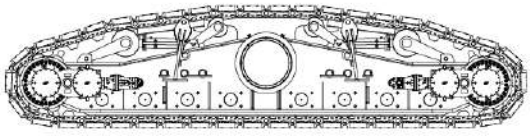
Carbody front/rear beam (no trunnions)		
Length	11,60 m	38' 1"
Width	2,80 m	9' 2"
Height	2,60 m	8' 6"
Weight	37 700 kg	83,000 lb



Carbody side beam with struts		
Length	9,10 m	29' 10"
Width	2,90 m	9' 6"
Height	2,90 m	9' 6"
Weight	34 800 kg	76,800 lb

Carbody center beam		
Length	8,00 m	26' 3"
Width	2,40 m	7' 11"
Height	2,10 m	6' 11"
Weight	10 100 kg	22,300 lb

Trunnion		
Length	3,30 m	10' 10"
Width	1,00 m	3' 3"
Height	1,00 m	3' 3"
Weight	5 700 kg	12,500 lb

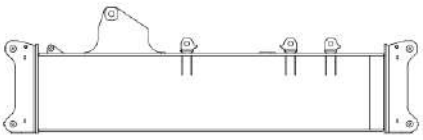


Crawlers		
Length	8,70 m	28' 5"
Width	2,30 m	6' 8"
Height*	2,30 m	6' 8"
Weight**	53 000 kg	116,800 lb

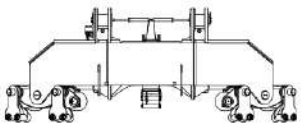
**Height with track tensioner at maximum travel 2,26 m (7' 5")*

***Weight without track pad: 30 250 kg (66,700 lb)*

Outline dimensions

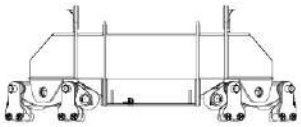


Rotating bed center		
Length	9,80 m	32' 2"
Width	3,50 m	11' 6"
Height	3,10 m	9' 10"
Weight	37 100 kg	81,700 lb



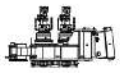
Front roller carrier and hook roller assembly		
Length	10,0 m	32' 10"
Width	3,20 m	10' 6"
Height	3,40 m	11' 2"
Weight*	49 000 kg	108,100 lb

**Weight without swing drive assembly*



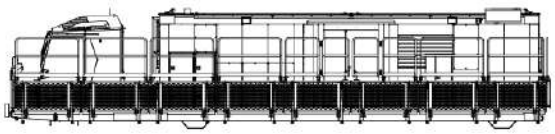
Rear roller carrier and hook roller assembly		
Length	9,30 m	30' 6"
Width	3,10 m	10' 2"
Height	3,50 m	11' 6"
Weight*	38 800 kg	85,600 lb

**Weight without swing drive assembly*



Swing drive assembly		
Length	3,00 m	9' 10"
Width	1,30 m	4' 3"
Height	2,00 m	6' 7"
Weight	2 300 kg	5,100 lb

Power plant support		
Length	4,60 m	15' 1"
Width	1,90 m	6' 3"
Height	0,50 m	1' 8"
Weight	1 800 kg	3,970 lb

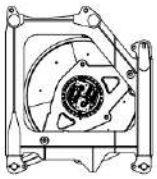


Power plant and cab assembly		
Length	15,10 m	49' 7"
Width	3,50 m	11' 6"
Height	3,10 m	10' 2"
Weight	36 700 kg	80,800 lb

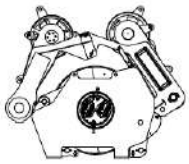
Option

Outline dimensions

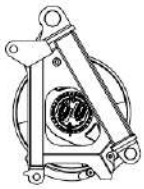
Whip hoist drum		
Length	5,20 m	17' 1"
Width	2,80 m	9' 2"
Height	3,10 m	10' 2"
Weight	31 000 kg	68,000 lb



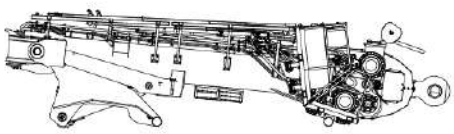
Main hoist drum #2		
Length	5,40 m	17' 9"
Width	2,90 m	9' 6"
Height	3,20 m	10' 6"
Weight	38 100 kg	84,000 lb



Boom hoist drum with sheave bank and equalizer		
Length	4,50 m	14' 9"
Width	3,30 m	10' 10"
Height	2,90 m	9' 6"
Weight	37 600 kg	83,000 lb

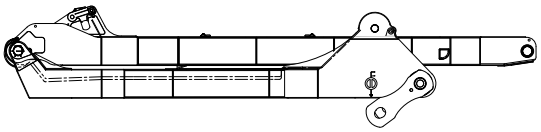


Main hoist drum #1		
Length	5,90 m	19' 4"
Width	2,80 m	9' 2"
Height	3,40 m	11' 2"
Weight	41 280 kg	91,000 lb

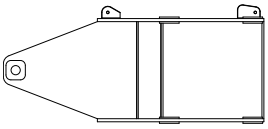


Counterweight positioning actuator		
Length	10,40 m	34' 1"
Width	2,60 m	8' 6"
Height	2,60 m	8' 6"
Weight	25 000 kg	55,400 lb

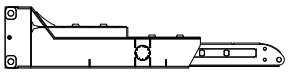
Outline dimensions



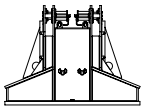
Counterweight positioning frame		
Length	14,60 m	47' 11"
Width	3,52 m	11' 6"
Height	3,00 m	9' 10"
Weight	38 000 kg	83,800 lb



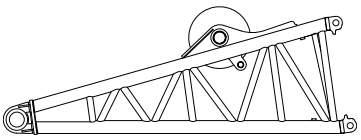
Counterweight tray center		
Length	5,30 m	17' 5"
Width	3,50 m	11' 6"
Height	2,50 m	8' 2"
Weight	30 000 kg	66,200 lb



Counterweight tray side		
Length	7,10 m	23' 4"
Width	3,00 m	9' 10"
Height	2,20 m	7' 3"
Weight	26 580 kg	58,600 lb



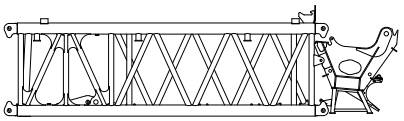
Counterweight pad		
Length	3,40 m	11' 2"
Width	1,50 m	4' 11"
Height	2,50 m	8' 2"
Weight	9 700 kg	21,450 lb



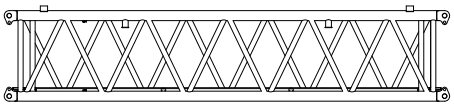
7,0 m No. 92 mast butt		
Length	7,60 m	24' 11"
Width	3,10 m	10' 2"
Height	3,20 m	10' 6"
Weight	11 400 kg	25,200 lb

Option

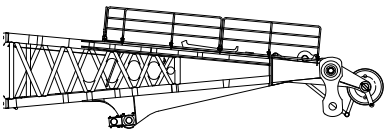
Outline dimensions



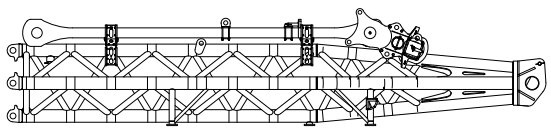
8,5 m No. 92 mast insert with raising frame		
Length	10,60 m	34' 9"
Width	3,30 m	10' 10"
Height	3,00 m	9' 10"
Weight	16 600 kg	36,600 lb



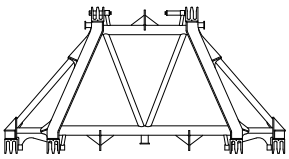
12,0 m No. 92 mast insert		
Length	12,30 m	40' 4"
Width	3,10 m	10' 2"
Height	2,70 m	8' 10"
Weight	9 800 kg	21,500 lb



11,0 m No. 92 mast top		
Length	13,00 m	42' 8"
Width	3,50 m	11' 6"
Height	3,60 m	11' 10"
Weight	27 500 kg	60,600 lb



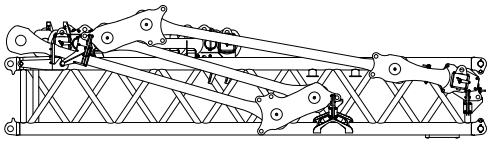
12,5 m No. 93 backhitch butt		
Length	14,60 m	47' 11"
Width	1,40 m	4' 7"
Height	3,0 m	9' 10"
Weight	12 100 kg	26,720 lb



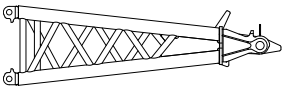
3,2 m No. 93 backhitch transition insert		
Length	6,70 m	22' 0"
Width	3,50 m	11' 6"
Height	2,70 m	8' 10"
Weight	8 400 kg	18,500 lb

Option

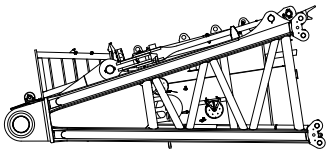
Outline dimensions



11,4 m No. 93 backhitch insert		
Length	11,70 m	38' 5"
Width	3,50 m	11' 6"
Height	3,20 m	10' 6"
Weight	20 400 kg	45,000 lb

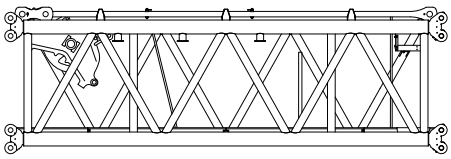


5,9 m No. 93 backhitch top		
Length	6,40 m	20' 12"
Width	3,20 m	10' 6"
Height	2,00 m	6' 7"
Weight	5 400 kg	11,900 lb

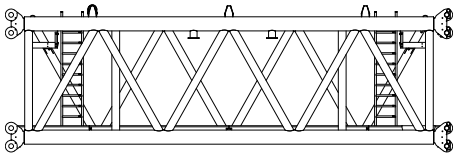


7,0 m No. 90 boom butt		
Length	7,70 m	25' 3"
Width	4,00 m	13' 1"
Height	3,20 m	10' 6"
Weight*	27 600 kg	60,720 lb

**Weight with boom stands and boom stop assemblies*



10,0 m No. 90 boom insert with wire rope guide		
Length	10,30 m	33' 9"
Width	4,00 m	13' 1"
Height	3,2 m	10' 6"
Weight	25 000 kg	55,020 lb

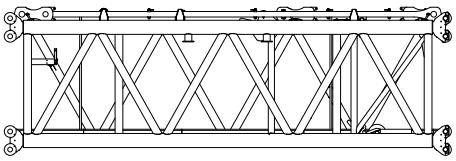


10,0 m No. 90 boom insert without straps		
Length	10,30 m	33' 9"
Width	4,00 m	13' 1"
Height	3,20 m	10' 6"
Weight*	23 600 kg	52,000 lb

**Weight without wire rope guide*

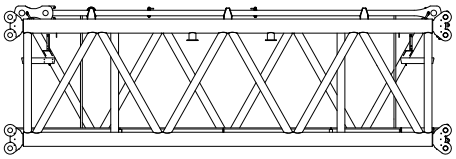
Option

Outline dimensions

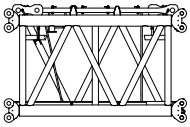


10,0 m No. 90 boom insert with equalizer platform		
Length	10,30 m	33' 9"
Width	4,00 m	13' 1"
Height	3,20 m	10' 6"
Weight*	30 800 kg	67,900 lb

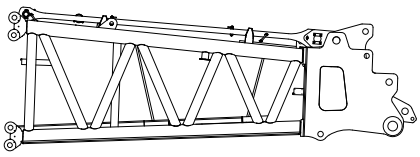
**Weight without wire rope guide*



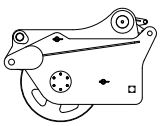
10,0 m No. 90 boom insert with straps		
Length	10,30 m	33' 9"
Width	4,00 m	13' 1"
Height	3,2 m	10' 6"
Weight	26 100 kg	57,500 lb



5,0 m No. 90 boom insert with straps		
Length	5,30 m	17' 5"
Width	4,00 m	13' 1"
Height	3,20 m	10' 6"
Weight	15 900 kg	35,040 lb



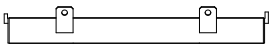
8,0 m No. 90 boom top		
Length	9,80 m	32' 2"
Width	4,00 m	13' 1"
Height	3,20 m	10' 6"
Weight	37 600 kg	82,800 lb



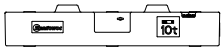
Lower boom point assembly		
Length	2,70 m	8' 10"
Width	2,00 m	6' 7"
Height	2,10 m	6' 11"
Weight	11 300 kg	25,000 lb

Option

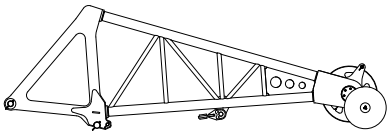
Outline dimensions



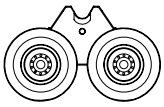
Counterweight fabricated		
Length	3,50 m	11' 6"
Width	2,50 m	8' 2"
Height	0,60 m	2' 0"
Weight	20 000 kg	44,000 lb



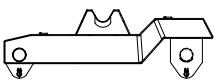
Counterweight cast		
Length	2,40 m	7' 10"
Width	1,90 m	6' 3"
Height	0,46 m	1' 6"
Weight	10 000 kg	22,000 lb



Upper boom point assembly		
Length	9,10 m	29' 10"
Width	2,30 m	7' 7"
Height	3,00 m	9' 10"
Weight	7 700 kg	16,970 lb



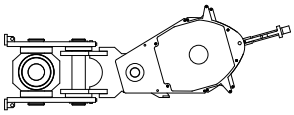
Boom raising dolly		
Length	2,90 m	9' 6"
Width	2,50 m	8' 3"
Height	1,70 m	5' 7"
Weight	9 200 kg	20,200 lb



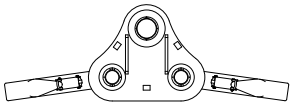
Luffing jib raising beam		
Length	4,00 m	13' 1"
Width	1,30 m	4' 3"
Height	1,30 m	4' 3"
Weight	2 500 kg	5,500 lb

Option

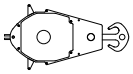
Outline dimensions



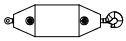
Block assembly, 2 000 t		
Length	5,90 m	19' 4"
Width	3,50 m	11' 6"
Height	2,50 m	8' 2"
Weight	39 600 kg	87,400 lb



Hook assembly, 2 000 t		
Length	5,40 m	17' 9"
Width	1,70 m	5' 7"
Height	1,90 m	6' 3"
Weight	15 300 kg	33,800 lb



Hook block, 200 t		
Length	3,20 m	10' 6"
Width	1,60 m	5' 3"
Height	1,40 m	4' 7"
Weight	12 700 kg	28,000 lb



Weight ball, 50 t		
Length	2,75 m	9' 0"
Width	0,80 m	2' 7"
Height	0,80 m	2' 7"
Weight	5 000 kg	11,000 lb

Option

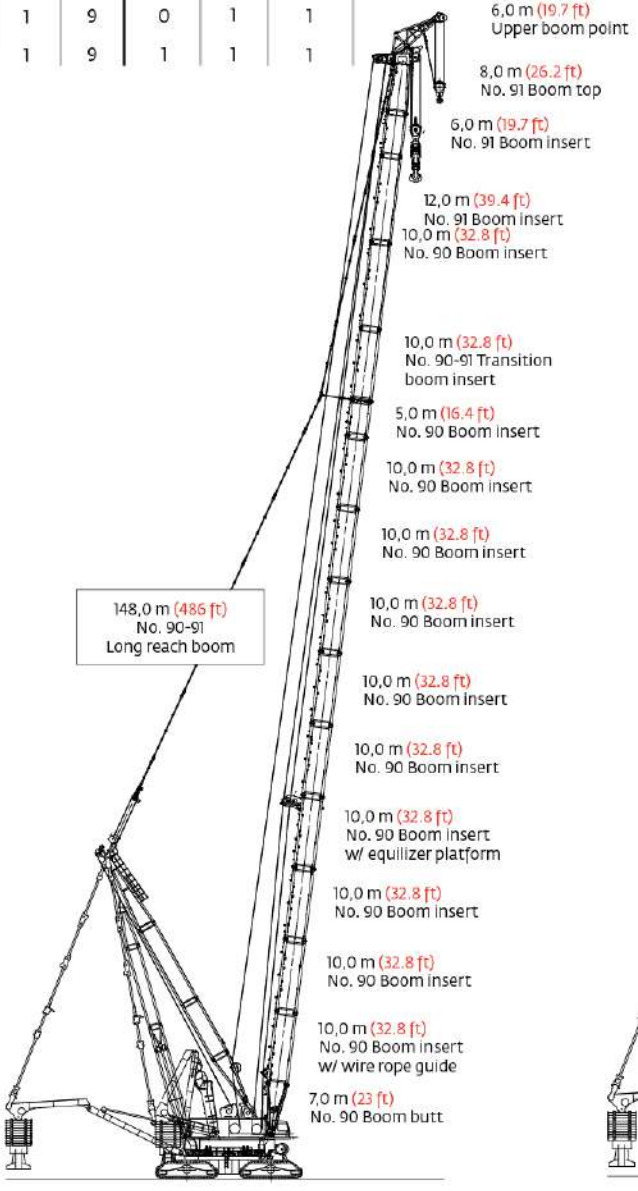
Boom combinations

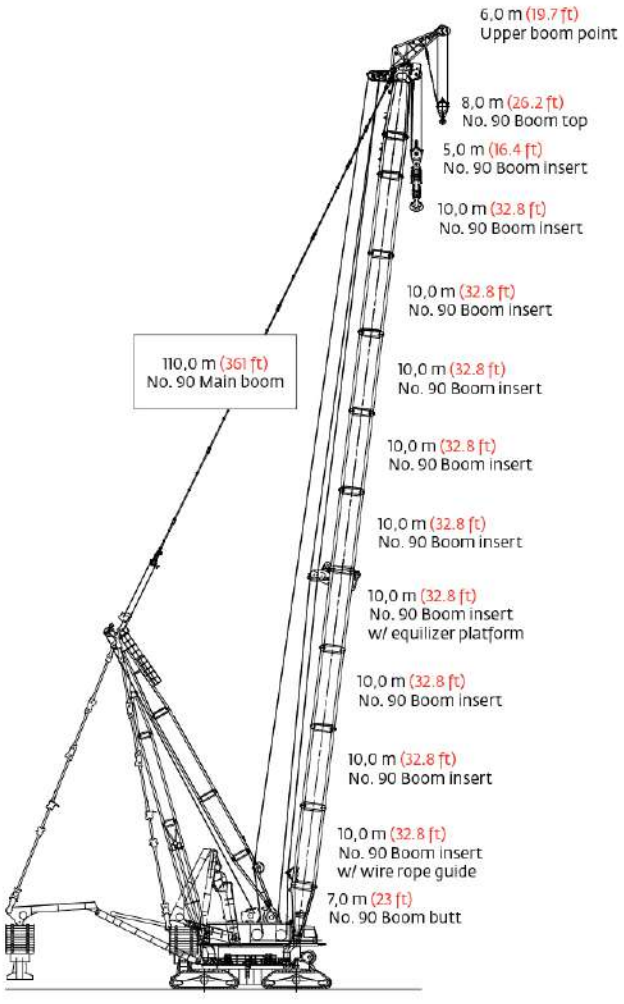
No. 90-91 boom combinations

Boom length m (ft)	Boom inserts No. 90 5 m (16.4 ft)	Boom inserts No. 90 10 m (32.8 ft)	Boom inserts No. 91 6 m (19.7 ft)	Boom inserts No. 91 12 m (39.4 ft)	No. 90-91 transition 10 m (32.8 ft)
80 (262)	1	5	0	0	1
85 (279)	0	6	0	0	1
90 (295)	1	6	0	0	1
95 (312)	0	7	0	0	1
100 (328)	1	7	0	0	1
105 (344)	0	8	0	0	1
110 (361)	1	8	0	0	1
115 (377)	0	9	0	0	1
120 (394)	1	9	0	0	1
126 (413)	1	9	1	0	1
132 (433)	1	9	0	1	1
138 (453)	1	9	1	1	1

No. 90 boom combinations

Boom length m (ft)	Boom inserts 5 m (16.4 ft)	Boom inserts 10 m (32.8 ft)
55 (180)	0	4
60 (197)	1	4
65 (213)	0	5
70 (230)	1	5
75 (246)	0	6
80 (262)	1	6
85 (279)	0	7
90 (295)	1	7
95 (312)	0	8
100 (328)	1	8
105 (344)	0	9
110 (361)	1	9



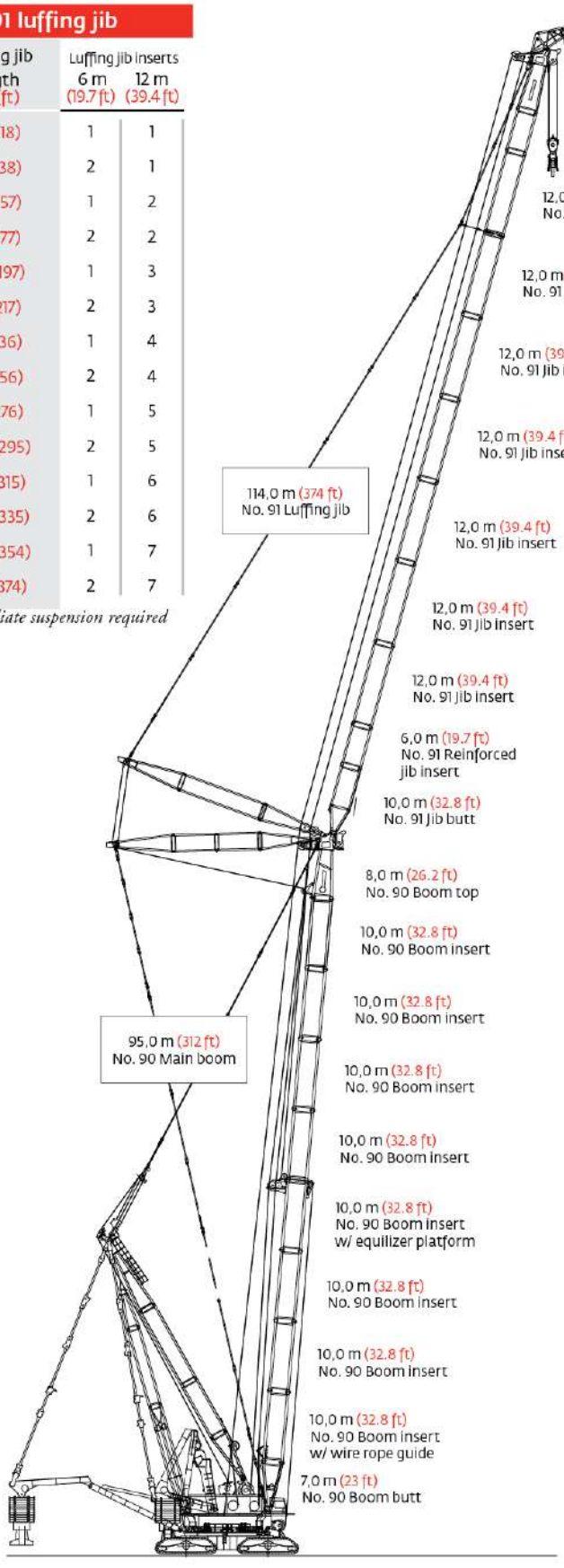


Boom combinations

No. 91 luffing jib

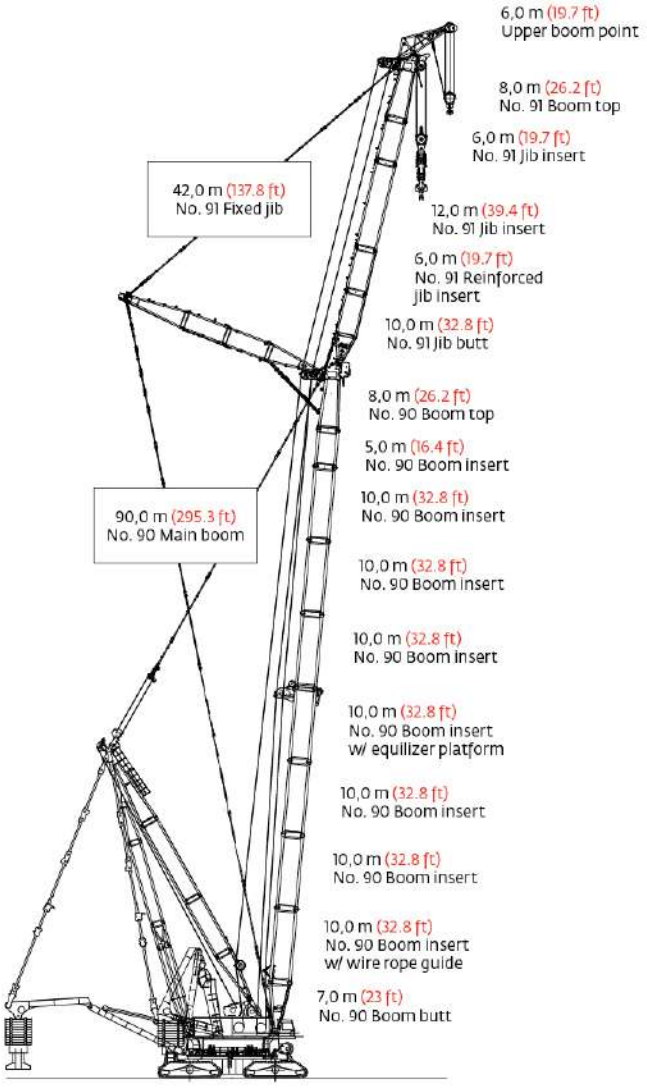
Luffing jib length m (ft)	Luffing jib inserts 6 m (19.7 ft)	12 m (39.4 ft)
36 (118)	1	1
42 (138)	2	1
48 (157)	1	2
54 (177)	2	2
60 (197)	1	3
66 (217)	2	3
72 (236)	1	4
78 (256)	2	4
84 (276)	1	5
*90 (295)	2	5
*96 (315)	1	6
*102 (335)	2	6
*108 (354)	1	7
*114 (374)	2	7

**Intermediate suspension required*

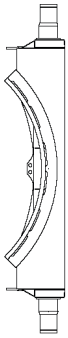


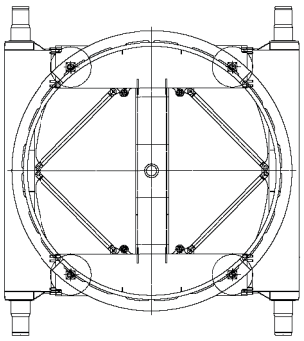
No. 91 fixed jib

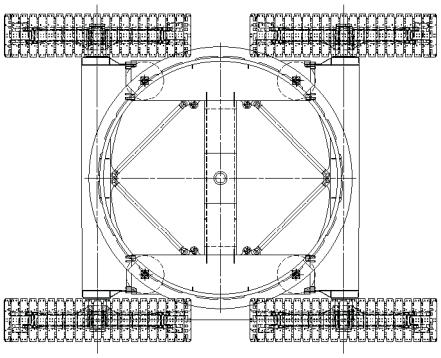
Fixed jib length m (ft)	Fixed jib inserts 6 m (19.7 ft)	12 m (39.4 ft)
24 (78.7)	1	0
30 (98.4)	2	0
36 (118.1)	1	1
42 (137.8)	2	1

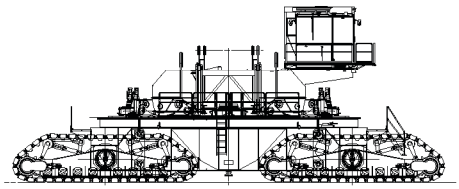


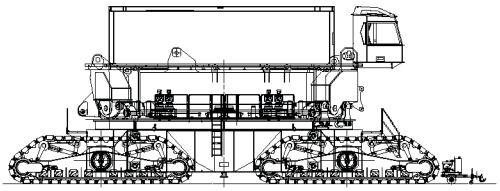
Crane assembly

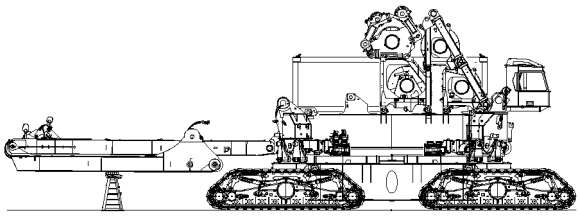


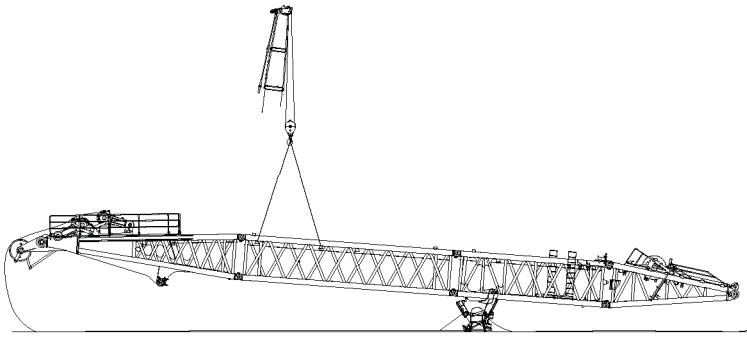


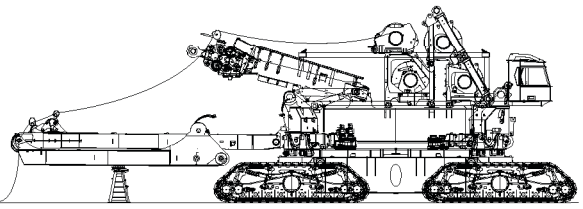




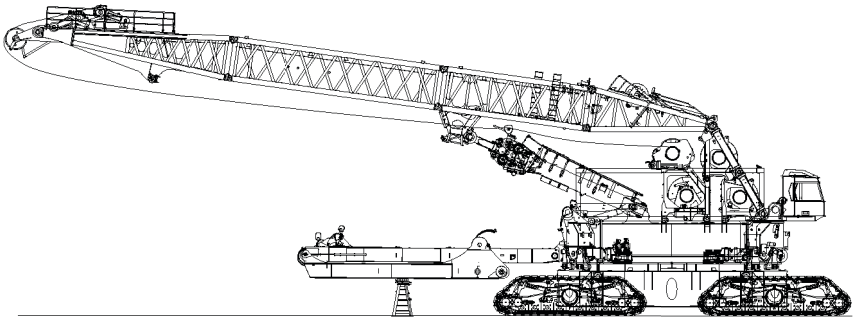


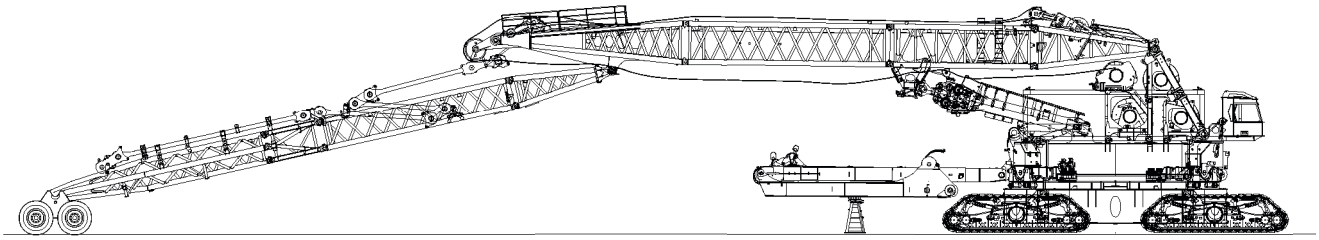


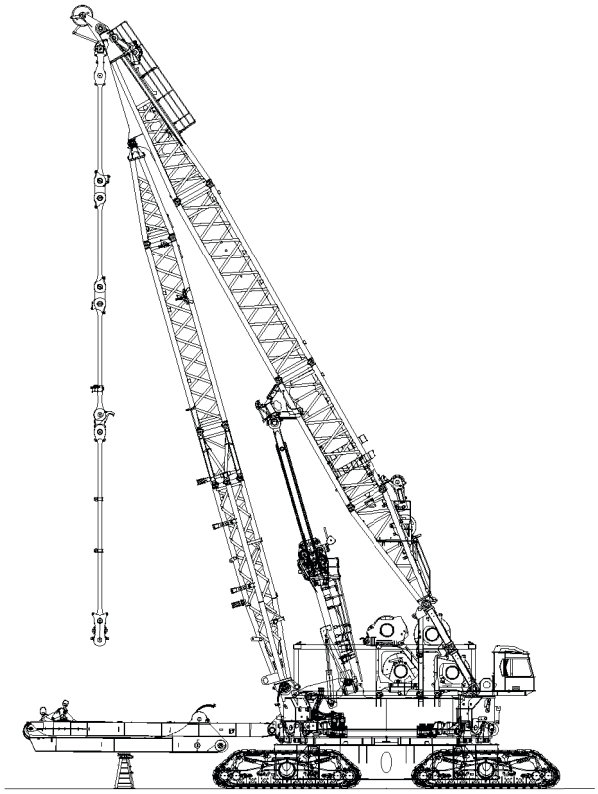




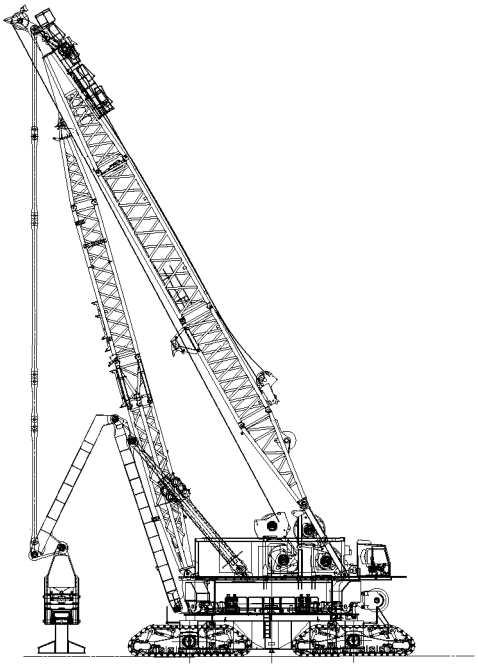
Crane assembly

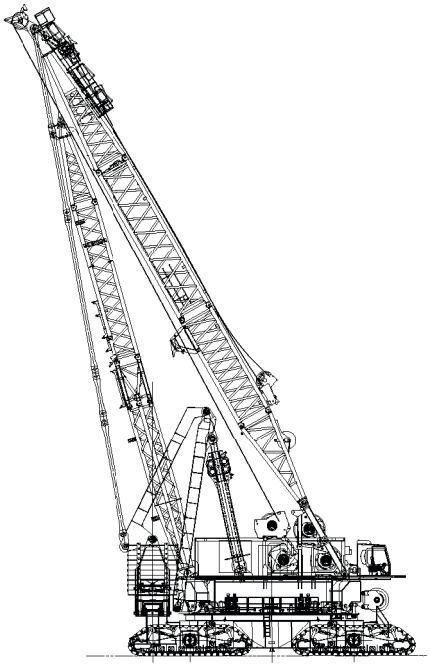


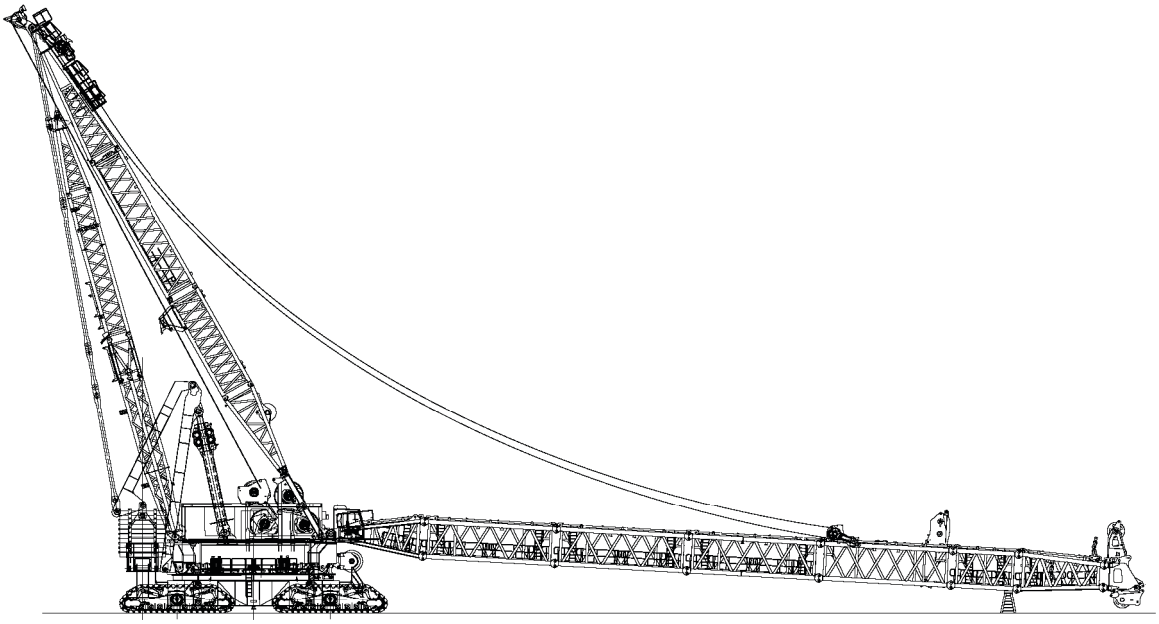




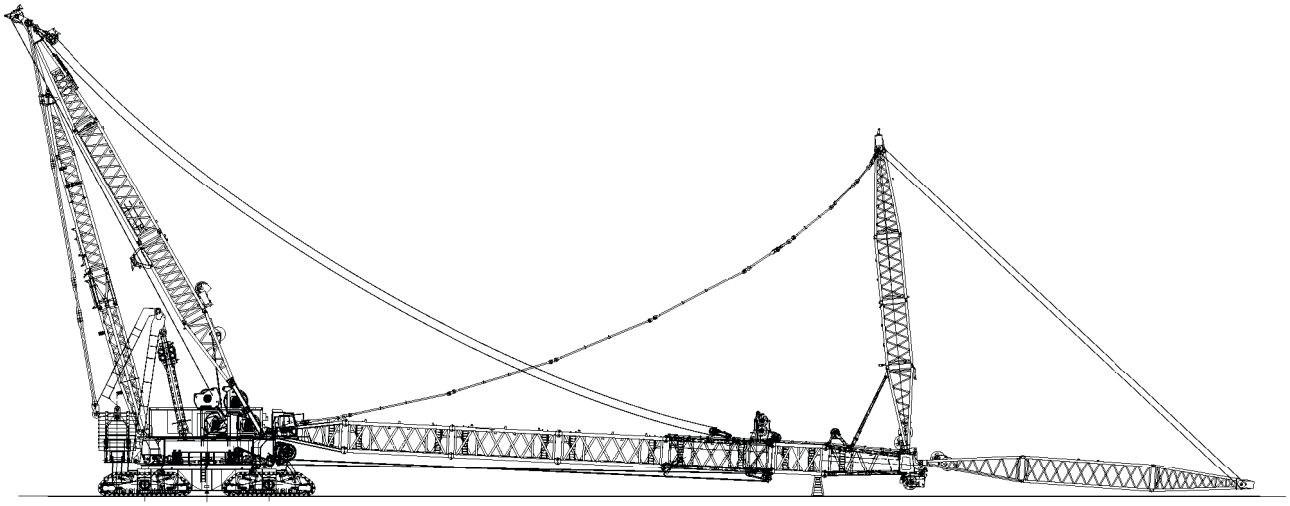
Crane assembly

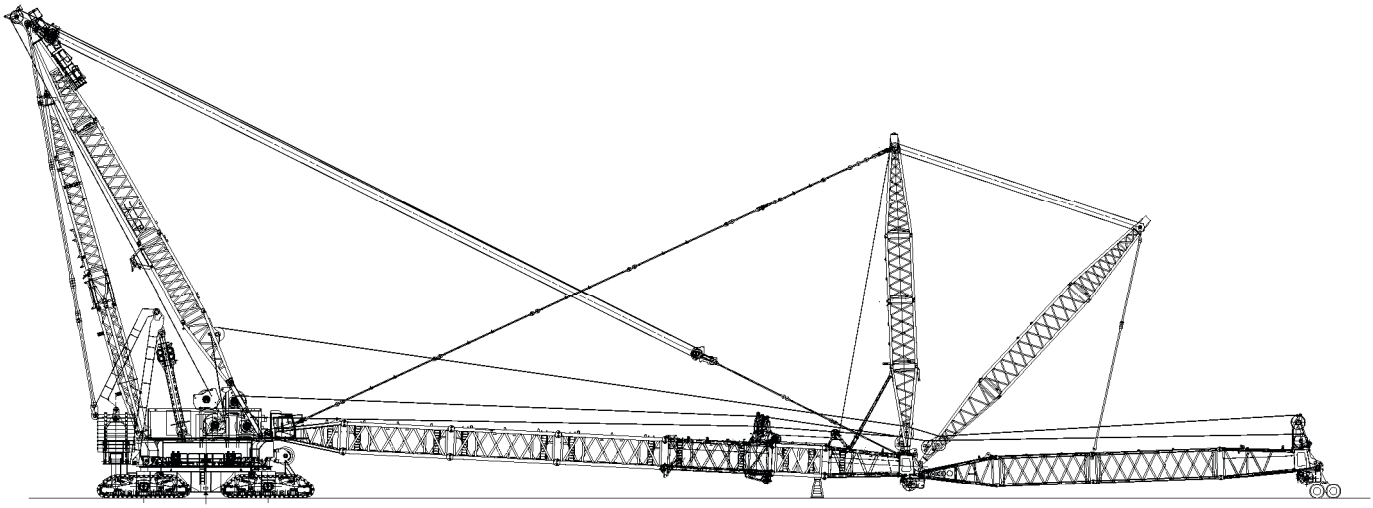




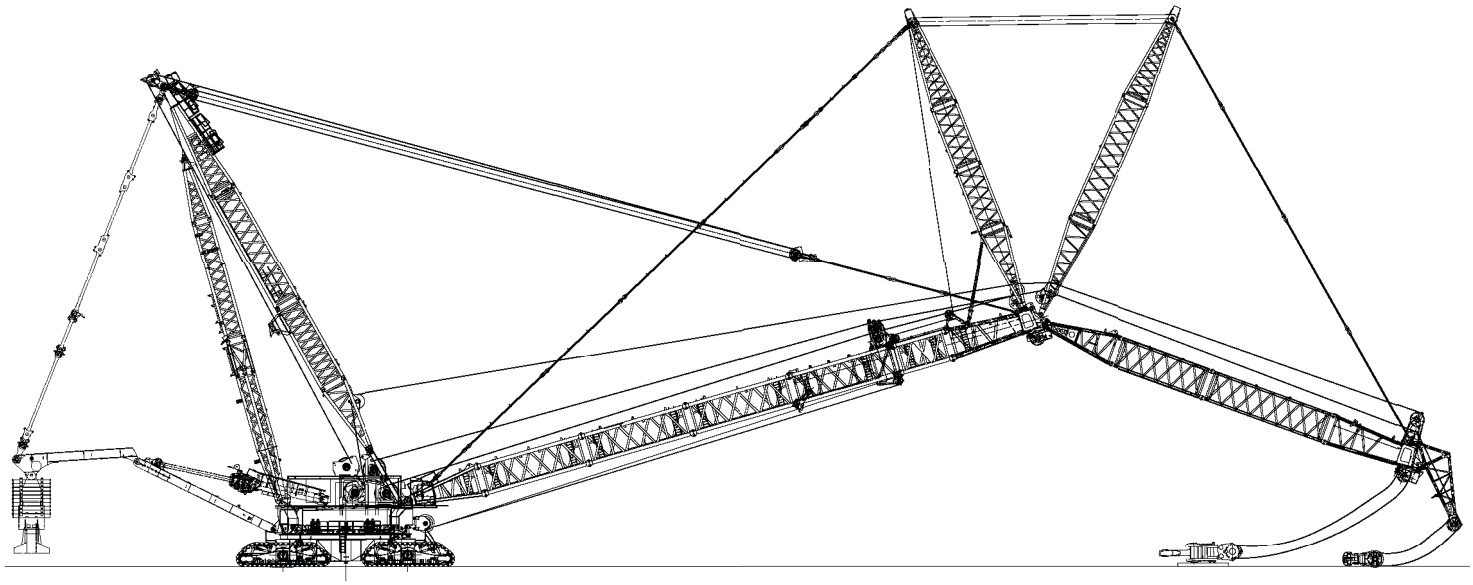


Crane assembly

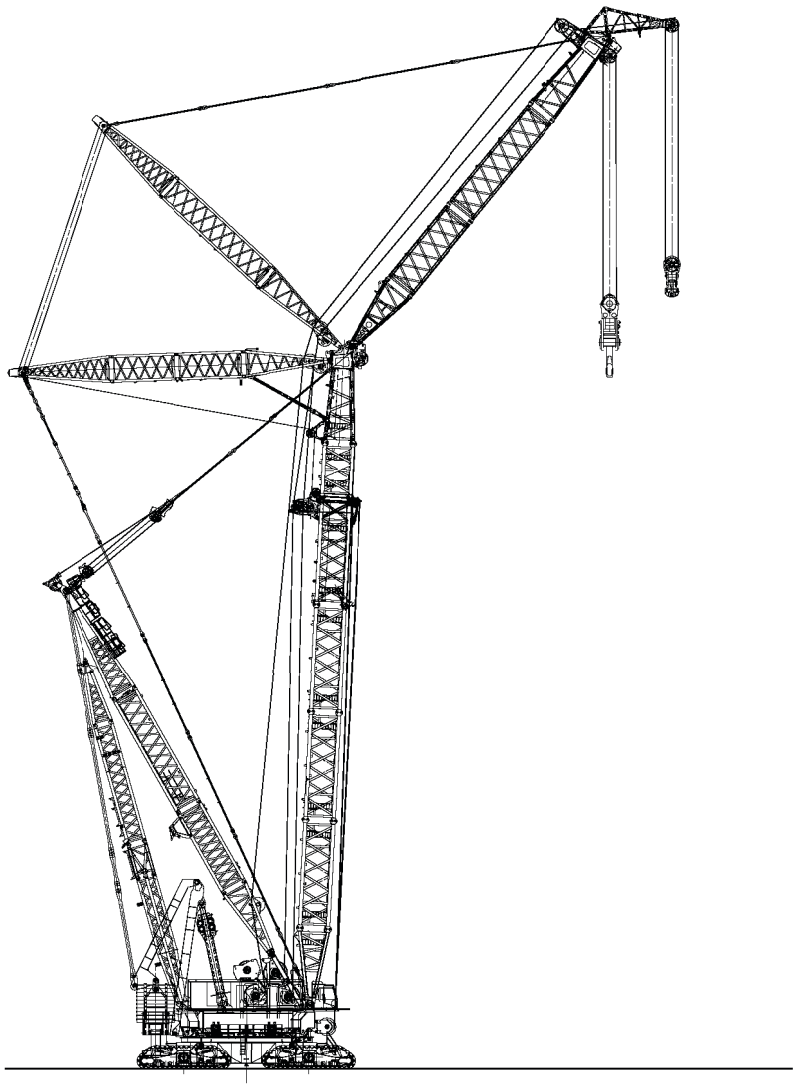




Crane assembly

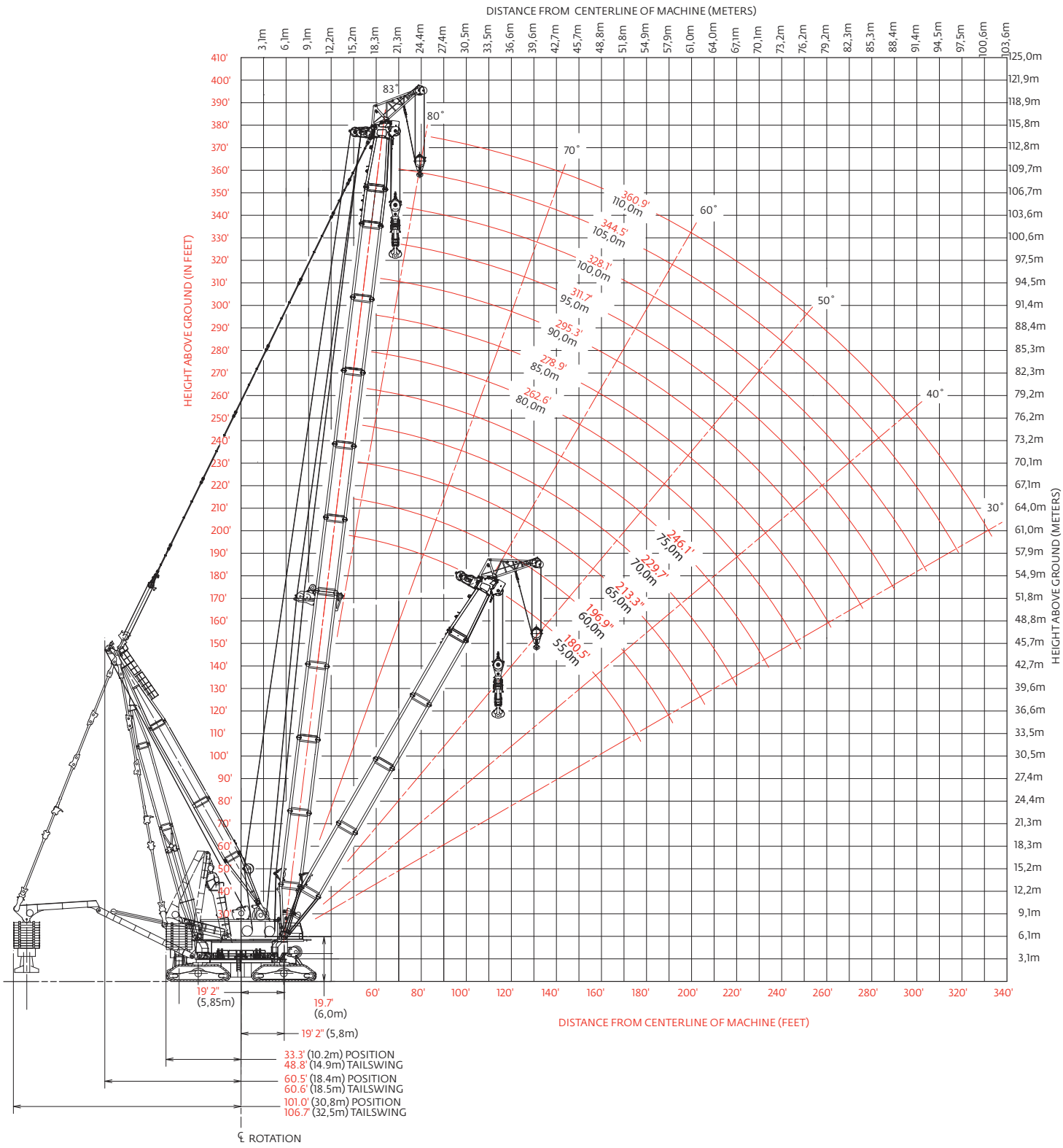


Crane assembly



Heavy-lift boom range diagram

No. 90 main boom



Heavy-lift boom load charts

No. 90 main boom

963 884 kg (2,125,000 lb) Variable Position Counterweight (VPC)

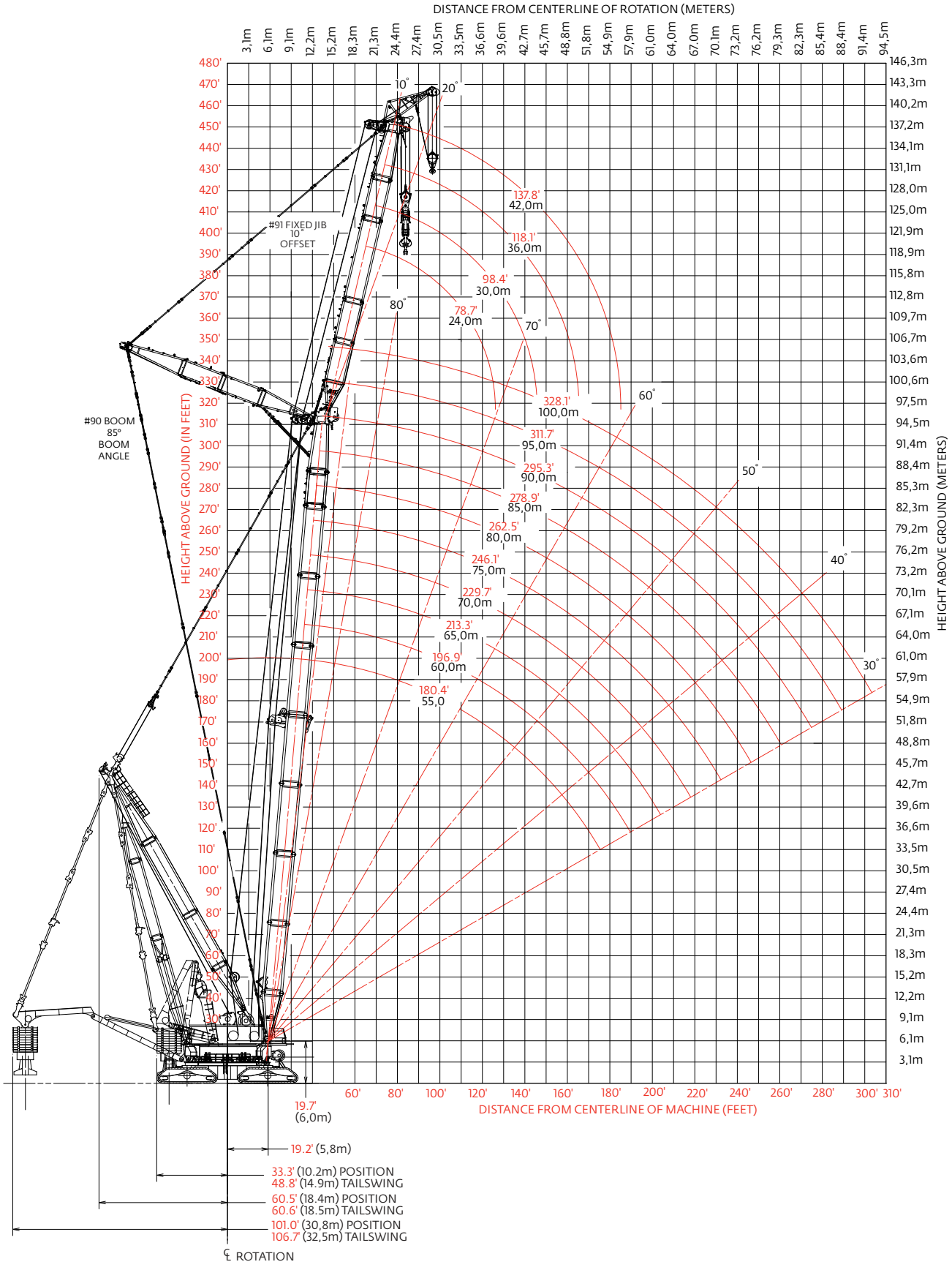
360° Rating — kg (lb) x 1 000

Boom m (ft)	55,0 (180.4)	60,0 (196.9)	65,0 (213.2)	70,0 (229.7)	75,0 (246.1)	80,0 (262.5)	85,0 (278.9)	90,0 (295.3)	95,0 (311.7)	100,0 (328.1)	105,0 (344.5)	110,0 (360.9)
Radius												
13.4 (44)	2300* (5071)*											
15.2 (50)	2000 (4409)	1900 (4189)										
16 (55)	1976 (4306)	1898 (4179)	- (3985)	- (3774)	- (3446)							
18 (60)	1851 (4010)	1822 (3961)	1757 (3847)	1692 (3722)	1563 (3466)	- (3180)	- (2935)					
20 (70)	1687 (3520)	1680 (3504)	1650 (3489)	1599 (3386)	1556 (3290)	1442 (3180)	1331 (2935)	1227 (2705)	1131 (2493)	1039 (2291)	- (2146)	- (1931)
24 (80)	1440 (3131)	1433 (3115)	1429 (3107)	1418 (3090)	1384 (3019)	1343 (2930)	1301 (2847)	1227 (2705)	1131 (2493)	1039 (2291)	973 (2146)	876 (1931)
28 (90)	1254 (2817)	1247 (2801)	1243 (2793)	1236 (2777)	1233 (2768)	1210 (2707)	1179 (2636)	1144 (2557)	1116 (2485)	1039 (2291)	973 (2146)	876 (1931)
32 (100)	1107 (2556)	1100 (2541)	1097 (2532)	1090 (2517)	1086 (2508)	1079 (2492)	1072 (2449)	1042 (2380)	1016 (2317)	986 (2246)	957 (2146)	876 (1931)
36 (115)	984 (2238)	978 (2223)	975 (2216)	969 (2200)	966 (2192)	960 (2176)	957 (2168)	949 (2149)	932 (2097)	906 (2037)	882 (1982)	860 (1926)
40 (130)	858 (1919)	854 (1908)	852 (1903)	847 (1891)	845 (1886)	839 (1873)	836 (1868)	831 (1855)	828 (1849)	823 (1836)	813 (1810)	793 (1761)
44 (145)	724 (1584)	755 (1656)	753 (1652)	748 (1639)	745 (1634)	740 (1622)	737 (1616)	731 (1603)	729 (1598)	723 (1584)	720 (1579)	714 (1565)
48 (160)	612 (1306)	654 (1399)	672 (1452)	667 (1440)	664 (1435)	659 (1422)	656 (1417)	650 (1404)	648 (1398)	642 (1385)	639 (1379)	633 (1365)
52 (175)	512 (1060)	559 (1167)	594 (1248)	599 (1277)	597 (1273)	591 (1260)	589 (1255)	583 (1242)	580 (1236)	574 (1222)	572 (1217)	565 (1203)
56 (190)		473 (957)	513 (1053)	537 (1109)	539 (1134)	534 (1123)	532 (1118)	526 (1106)	523 (1101)	517 (1088)	515 (1082)	509 (1068)
60 (205)			439 (872)	468 (943)	488 (997)	484 (1007)	482 (1002)	476 (991)	474 (986)	469 (974)	466 (968)	460 (955)
64 (220)				404 (786)	430 (853)	441 (887)	439 (904)	433 (892)	431 (887)	426 (875)	423 (870)	418 (857)
68 (230)					374 (762)	390 (803)	401 (837)	396 (834)	394 (829)	388 (817)	386 (812)	380 (800)
72 (240)						341 (722)	358 (762)	363 (778)	361 (777)	355 (765)	353 (759)	347 (747)
76 (250)							315 (690)	324 (710)	332 (729)	326 (717)	324 (711)	318 (699)
80 (260)							- (619)	285 (645)	296 (669)	299 (672)	298 (667)	292 (655)
84 (270)								- (582)	262 (610)	266 (617)	272 (627)	269 (614)
88 (280)									228 (553)	235 (565)	243 (577)	242 (573)
92 (300)										205 (462)	215 (483)	216 (484)
96 (320)											187 (391)	190 (400)
100 (330)												166 (358)

**with 45,0 m (147.6 ft) boom and specially designed and manufactured equipment*

Fixed jib range diagram

No. 91 fixed jib on No. 90 main boom



Fixed jib load charts

No. 91 fixed jib on No. 90 main boom

963 884 kg (2,125,000 lb) Variable Position Counterweight (VPC)
360° Rating kg (lb) x 1 000

24,0 m (78.7 ft) Jib length

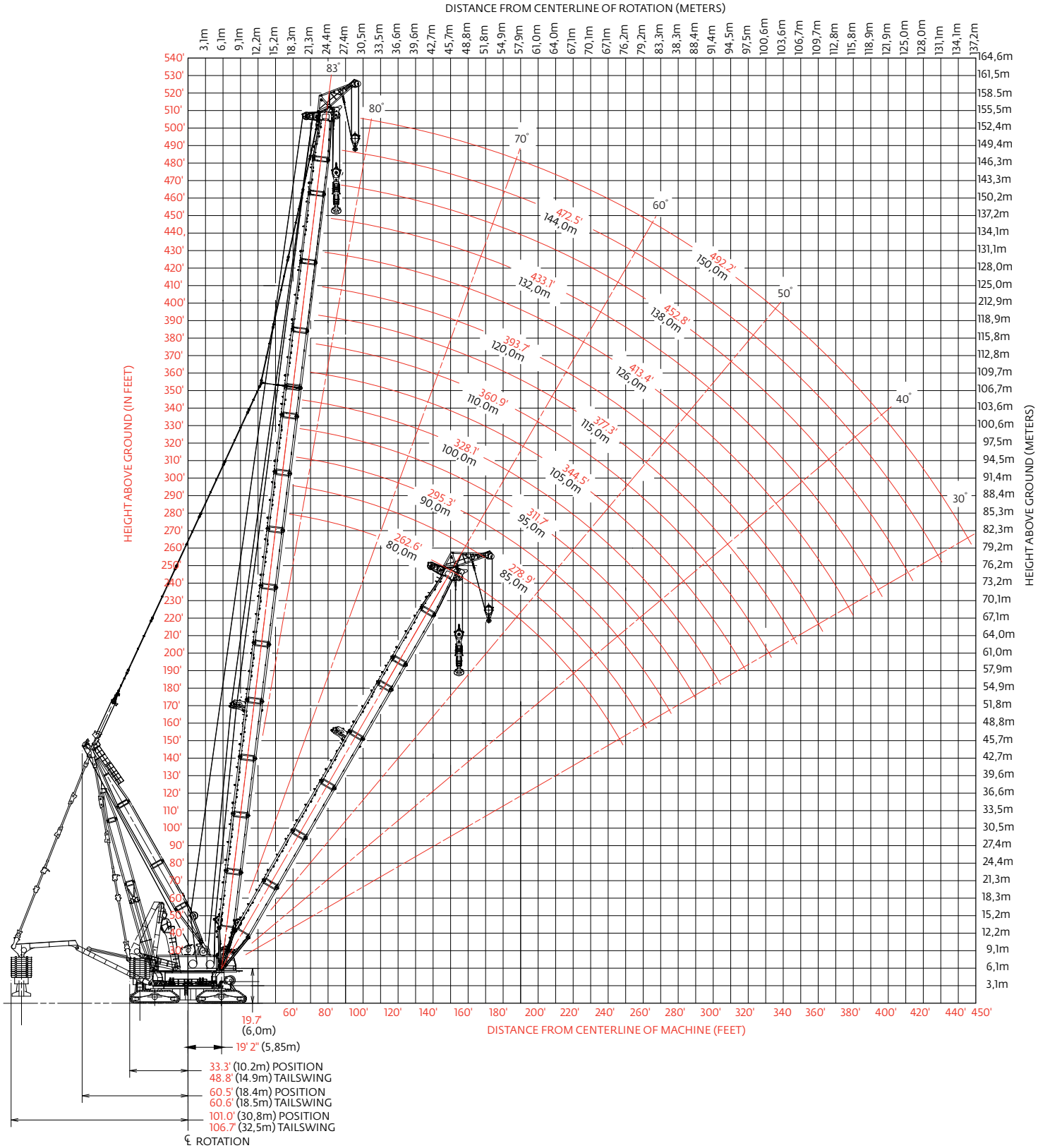
Boom m (ft)	10° Offset 55,0 (180.4)	65,0 (213.2)	75,0 (246.1)	85,0 (278.9)	95,0 (311.7)	100,0 (328.0)	20° Offset 55,0 (180.4)	65,0 (213.2)	75,0 (246.1)	85,0 (278.9)	95,0 (311.7)	100,0 (328.0)
Radius												
19,8 (65)	1400 (3086)											
24 (80)	1333 (2903)	1204 (2655)	1025 (2261)	822 (1813)			995 (2194)	1117 (2462)				
26 (85)	1261 (2788)	1192 (2632)	1025 (2261)	822 (1813)	681 (1502)	617 (1361)	961 (2123)	1083 (2392)	927 (2044)			
32 (105)	1077 (2374)	1031 (2274)	976 (2152)	822 (1813)	681 (1502)	617 (1361)	847 (1868)	971 (2141)	927 (2044)	746 (1644)	621 (1370)	567 (1250)
38 (125)	904 (1989)	892 (1962)	857 (1886)	814 (1794)	681 (1502)	617 (1361)	754 (1659)	869 (1913)	867 (1909)	746 (1644)	621 (1370)	567 (1250)
46 (150)	697 (1550)	688 (1530)	679 (1511)	673 (1498)	661 (1468)	617 (1361)	657 (1456)	696 (1549)	689 (1533)	684 (1522)	621 (1370)	567 (1250)
58 (190)	477 (1056)	491 (1086)	482 (1066)	475 (1050)	466 (1031)	461 (1020)	490 (1085)	497 (1099)	489 (1081)	482 (1067)	475 (1050)	470 (1039)
74 (235)	256 (629)	298 (716)	317 (753)	316 (740)	306 (721)	299 (706)	263 (647)	307 (736)	326 (767)	321 (751)	313 (733)	306 (722)
82 (270)		216 (470)	242 (529)	253 (552)	246 (538)	238 (522)		222 (484)	249 (545)	259 (566)	251 (549)	244 (534)
96 (315)				150 (331)	157 (347)	155 (342)			130 (287)	154 (341)	162 (357)	159 (352)
110 (360)						79 (177)					79 (177)	82 (184)
118 (390)												

42,0 m (137.8 ft) Jib Length

Boom m (ft)	10° Offset 55,0 (180.4)	65,0 (213.2)	75,0 (246.1)	85,0 (278.9)	90,0 (295.0)	20° Offset 55,0 (180.4)	65,0 (213.2)	75,0 (246.1)	85,0 (278.9)	90,0 (295.0)
Radius										
19,8 (65)										
24 (80)	969 (2138)									
26 (85)	969 (2138)	826 (1822)	700 (1543)							
32 (105)	969 (2138)	826 (1822)	700 (1543)	571 (1259)	522 (1151)	777 (1714)	700 (1545)	595 (1313)		
38 (125)	881 (1939)	826 (1822)	700 (1543)	571 (1259)	522 (1151)	696 (1533)	700 (1545)	595 (1313)	483 (1065)	443 (977)
46 (150)	705 (1569)	696 (1547)	686 (1521)	571 (1259)	522 (1151)	609 (1350)	686 (1519)	595 (1313)	483 (1065)	443 (977)
58 (190)	509 (1125)	499 (1103)	489 (1082)	484 (1070)	479 (1060)	502 (1110)	510 (1128)	503 (1111)	482 (1065)	443 (977)
74 (235)	316 (752)	337 (794)	332 (774)	325 (758)	319 (747)	333 (791)	349 (812)	341 (794)	335 (781)	330 (771)
82 (270)	241 (527)	264 (578)	272 (596)	266 (584)	260 (569)	256 (558)	279 (609)	284 (623)	277 (606)	271 (593)
96 (315)		159 (351)	175 (386)	181 (400)	178 (393)	133 (294)	170 (375)	186 (410)	191 (422)	186 (410)
110 (360)			91 (204)	105 (235)	106 (237)			99 (222)	113 (253)	114 (255)
118 (390)										74 (155)

Long reach boom range diagram

No. 90-91 long reach boom



Long reach boom load charts

No. 90-91 long reach boom

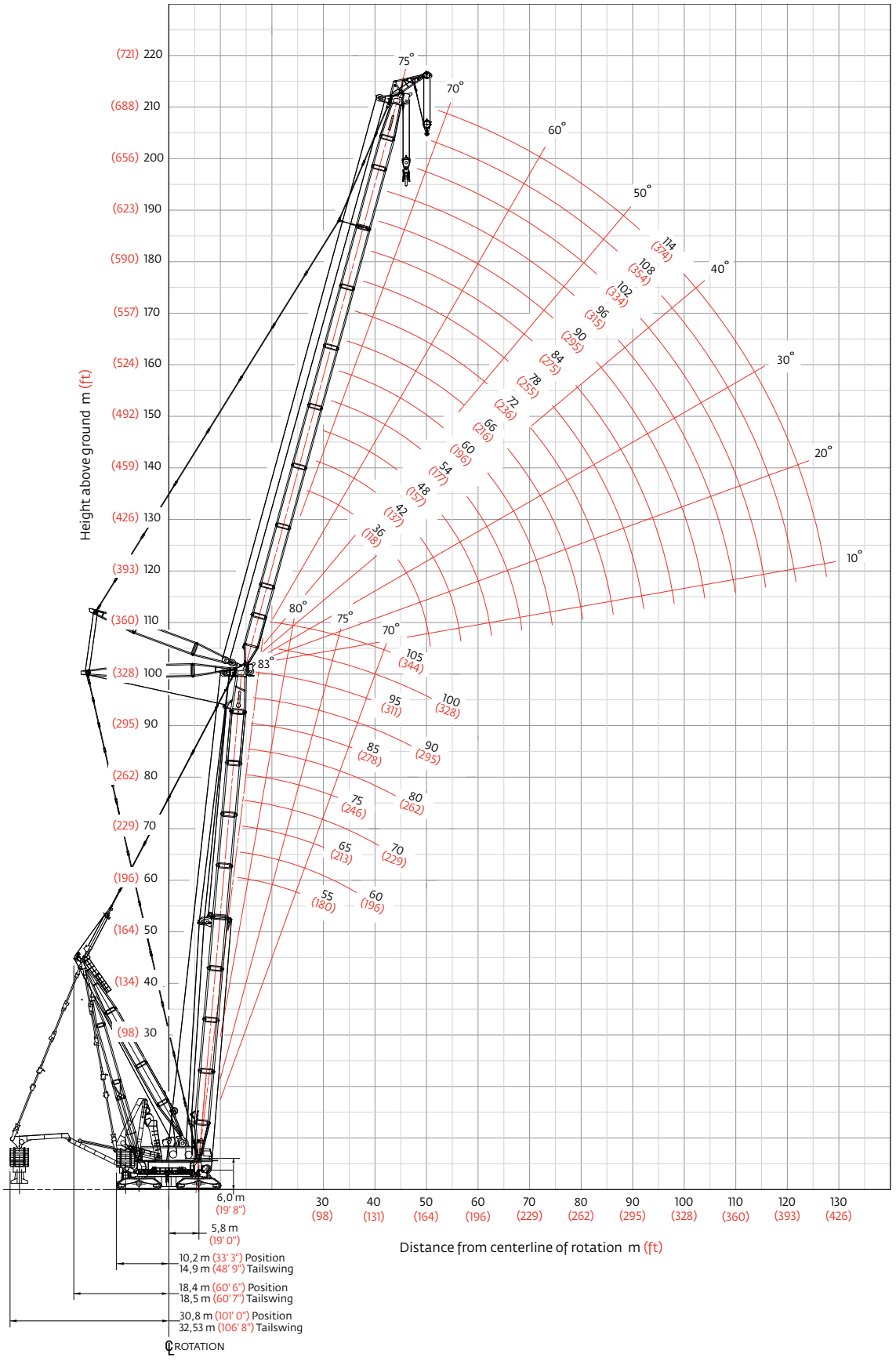
963, 884 kg (2,125,000 lb) Variable Position Counterweight (VPC)
360° Rating

kg (lb) x 1 000

Boom m (ft)	90,0 (295.3)	95,0 (311.7)	100,0 (328.1)	105,0 (344.5)	110,0 (360.9)	115,0 (377.3)	120,0 (393.7)	126,0 (413.4)	132,0 (433.1)	138,0 (452.8)
Radius										
19,8 (65)	1200 (2645)	1101 (2428)	985 (2173)							
22 (75)	1200 (2645)	1101 (2428)	985 (2173)	889 (1961)	801 (1766)	726 (1602)	657 (1448)	586 (1292)		
24 (80)	1200 (2645)	1101 (2428)	985 (2173)	889 (1961)	801 (1766)	726 (1602)	657 (1448)	586 (1292)	525 (1159)	470 (1036)
26 (85)	1197 (2645)	1101 (2428)	985 (2173)	889 (1961)	801 (1766)	726 (1602)	657 (1448)	586 (1292)	525 (1159)	470 (1036)
28 (90)	1145 (2557)	1097 (2428)	985 (2173)	889 (1961)	801 (1766)	726 (1602)	657 (1448)	586 (1292)	525 (1159)	470 (1036)
32 (105)	1035 (2281)	1020 (2249)	985 (2173)	889 (1961)	801 (1766)	726 (1602)	657 (1448)	586 (1292)	525 (1159)	470 (1036)
36 (120)	882 (1905)	880 (1900)	875 (1889)	867 (1884)	801 (1766)	726 (1602)	657 (1448)	586 (1292)	525 (1159)	470 (1036)
40 (130)	766 (1710)	763 (1705)	758 (1694)	756 (1689)	751 (1677)	725 (1602)	657 (1448)	586 (1292)	525 (1159)	450 (997)
44 (145)	673 (1476)	671 (1471)	666 (1460)	663 (1454)	658 (1443)	656 (1437)	647 (1423)	585 (1291)	507 (1115)	426 (937)
48 (155)	598 (1349)	596 (1344)	591 (1332)	589 (1327)	583 (1315)	581 (1310)	574 (1295)	575 (1288)	484 (1076)	404 (900)
52 (170)	537 (1189)	534 (1184)	529 (1172)	526 (1167)	521 (1155)	519 (1150)	512 (1135)	510 (1132)	463 (1022)	384 (849)
56 (185)	484 (1058)	482 (1053)	477 (1041)	474 (1036)	469 (1024)	466 (1019)	460 (1004)	458 (1000)	443 (974)	366 (804)
60 (195)	440 (983)	438 (978)	432 (966)	430 (961)	424 (949)	422 (944)	415 (929)	414 (926)	414 (926)	350 (776)
64 (210)	401 (886)	399 (880)	394 (868)	391 (863)	386 (851)	383 (846)	377 (831)	376 (828)	376 (828)	335 (738)
68 (225)	368 (802)	366 (797)	360 (785)	358 (779)	352 (767)	350 (762)	343 (747)	342 (745)	342 (745)	321 (704)
72 (240)	338 (729)	336 (724)	331 (712)	328 (707)	323 (695)	320 (689)	314 (674)	312 (672)	312 (672)	308 (667)
76 (250)	312 (686)	310 (681)	304 (669)	302 (664)	296 (651)	294 (646)	287 (631)	286 (629)	286 (629)	284 (624)
80 (270)	289 (610)	286 (605)	281 (593)	279 (588)	273 (575)	271 (570)	264 (555)	263 (553)	263 (553)	261 (548)
84 (280)		265 (571)	260 (559)	258 (554)	252 (542)	250 (536)	243 (521)	242 (519)	242 (519)	240 (514)
88 (290)		246 (540)	241 (528)	238 (523)	233 (510)	231 (505)	233 (490)	223 (486)	223 (488)	221 (483)
92 (300)			223 (498)	221 (493)	216 (481)	213 (476)	207 (461)	205 (457)	205 (459)	203 (454)
96 (320)				205 (441)	200 (428)	197 (423)	191 (408)	189 (406)	190 (406)	188 (402)
100 (330)					185 (405)	183 (399)	176 (385)	175 (381)	175 (382)	173 (378)
108 (350)							- (341)	150 (339)	150 (339)	147 (335)
116 (380)									128 (283)	126 (278)
124 410										104 (222)

Luffing jib range diagram

No. 91 luffing jib on No. 90 main boom



Luffing jib load charts

No. 91 luffing jib on No. 90 main boom

963 884 kg (2,125,000 lb) Variable Position Counterweight (VPC)
360° Rating kg (lb) x 1 000

85° Boom angle

55,0 m (180.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
23,86 (75)	1100 (2425)			
30,0 (100)	1051 (2265)	684 (1509)		
40,0 (130)	660 (1478)	653 (1451)	384 (848)	
48,0 (160)		537 (1155)	384 (848)	194 (429)
58,0 (190)		400 (885)	355 (785)	192 (425)
68,0 (220)		288 (667)	298 (670)	189 (419)
76,0 (250)			255 (562)	186 (411)
86,0 (280)			197 (446)	170 (379)
94,0 (310)			130 (274)	154 (339)
106,0 (350)				116 (253)
122,0 (405)				55 (103)

65,0 m (213.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
24,38 (80)	929 (2048)			
30,0 (100)	929 (2048)	– (1338)		
40,0 (130)	684 (1533)	567 (1260)	350 (771)	
48,0 (160)		471 (1020)	350 (771)	180 (398)
58,0 (190)		363 (802)	312 (688)	179 (396)
68,0 (220)		285 (642)	259 (582)	177 (391)
76,0 (250)			221 (486)	168 (371)
86,0 (280)			182 (408)	149 (331)
94,0 (310)			139 (295)	133 (292)
106,0 (350)				112 (246)
122,0 (405)				59 (113)

75,0 m (246.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
24,38 (80)	834 (1839)			
30,0 (100)	829 (1822)	– (1155)		
40,0 (130)	613 (1368)	494 (1098)	314 (692)	
48,0 (160)	410 (810)	413 (893)	314 (692)	167 (367)
58,0 (190)		320 (708)	274 (606)	165 (365)
68,0 (220)		253 (569)	227 (511)	163 (361)
76,0 (250)			193 (425)	148 (327)
86,0 (280)			160 (357)	130 (289)
94,0 (310)			142 (312)	115 (253)
106,0 (350)				96 (210)
124,0 (410)				53 (105)

85,0 m (279.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
25,91 (85)	735 (1620)			
34,0 (110)	646 (1443)	454,0 (1002)		
42,0 (140)	507 (1097)	414 (902)	281 (621)	
52,0 (170)		329 (730)	266 (588)	152 (336)
60,0 (200)		270 (583)	233 (504)	150 (332)
70,0 (230)		217 (479)	192 (422)	140 (309)
80,0 (260)			157 (352)	123 (274)
88,0 (290)			136 (297)	109 (239)
98,0 (320)			– (263)	93 (207)
110,0 (360)				77 (170)
126,0 (415)				48 (100)

95,0 m (312.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
25,91 (85)	600 (1322)			
34,0 (110)	561 (1251)	390 (861)		
42,0 (140)	449 (972)	363 (790)	249 (549)	
52,0 (170)		292 (647)	233 (517)	137 (302)
60,0 (200)		241 (520)	204 (443)	135 (298)
70,0 (230)		195 (429)	168 (371)	122 (269)
80,0 (260)			138 (309)	106 (237)
88,0 (290)			119 (262)	93 (205)
98,0 (320)			– (236)	79 (176)
110,0 (360)				64 (143)
126,0 (415)				51 (107)

105,0 m (344.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)
27,43 (90)	510 (1125)	
32,0 (105)	493 (1087)	
38,0 (125)	440 (968)	329 (726)
44,0 (145)	376 (825)	304 (669)
50,0 (165)	327 (719)	269 (589)
56,0 (185)		235 (513)
62,0 (205)		204 (446)
68,0 (225)		180 (393)
74,0 (245)		165 (362)

Luffing jib load charts

No. 91 luffing jib on No. 90 main boom

963 884 kg (2,125,000 lb) Variable Position Counterweight (VPC)
360° Rating kg (lb) x 1 000

80° Boom angle

55,0 m (180.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
32,0 (100)	1032 (2345)			
36,0 (120)	955 (2085)			
46,0 (150)	635 (1416)	663 (1467)		
54,0 (180)		522 (1121)	366 (807)	
64,0 (210)		391 (863)	366 (807)	184 (406)
74,0 (240)		282 (654)	309 (697)	184 (406)
82,0 (270)			253 (554)	184 (406)
92,0 (300)			197 (442)	183 (405)
100,0 (330)				155 (338)
112,0 (370)				114 (247)
128,0 (420)				56 (123)

65,0 m (213.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
32,0 (105)	932 (2056)			
38,0 (125)	871 (1917)			
46,0 (150)	682 (1523)	589 (1299)		
54,0 (180)		552 (1185)	334 (737)	
64,0 (210)		411 (906)	334 (737)	171 (377)
74,0 (240)		311 (712)	322 (719)	171 (377)
82,0 (270)			271 (595)	171 (377)
92,0 (300)			211 (474)	171 (377)
100,0 (330)			146 (308)	167 (364)
116,0 (380)				116 (257)
130,0 (430)				53 (102)

75,0 m (246.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
36,0 (115)	839 (1849)			
42,0 (140)	769 (1679)	– (1143)		
52,0 (170)	559 (1248)	518 (1143)	303 (669)	
60,0 (200)		451 (973)	303 (669)	– (347)
70,0 (230)		355 (781)	303 (669)	157 (347)
80,0 (260)		– (540)	266 (595)	157 (347)
88,0 (290)			229 (502)	157 (347)
98,0 (320)			178 (402)	157 (347)
106,0 (350)				144 (315)
118,0 (390)				115 (246)
132,0 (435)				52 (106)

85,0 m (279.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
38,0 (120)	736 (1624)			
42,0 (140)	719 (1571)			
52,0 (170)	555 (1229)	450 (992)	272 (601)	
60,0 (200)		400 (866)	272 (601)	
70,0 (230)		320 (703)	272 (601)	144 (317)
80,0 (260)		258 (579)	237 (529)	144 (317)
88,0 (290)			204 (448)	144 (317)
98,0 (320)			170 (379)	140 (310)
106,0 (345)			– (277)	127 (283)
118,0 (390)				107 (234)
134,0 (440)				52 (113)

95,0 m (312.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
40,0 (125)	607 (1339)			
44,0 (145)	598 (1317)			
54,0 (175)	472 (1058)	386 (852)		
62,0 (205)		342 (747)	244 (539)	
72,0 (235)		276 (613)	238 (528)	130 (286)
80,0 (265)		234 (510)	210 (457)	130 (286)
90,0 (295)			175 (388)	130 (286)
100,0 (325)			147 (330)	119 (266)
106,0 (350)			133 (280)	110 (241)
118,0 (390)				93 (203)
134,0 (445)				60 (112)

105,0 m (344.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)
40,0 (130)	510 (1131)	
44,0 (145)	497 (1096)	
48,0 (160)	482 (1048)	329 (725)
54,0 (175)	420 (942)	329 (725)
60,0 (195)	– (822)	313 (697)
66,0 (215)		279 (622)
72,0 (235)		247 (549)
78,0 (255)		218 (484)
82,0 (275)		203 (439)

Luffing jib load charts

No. 91 luffing jib on No. 90 main boom

963 884 kg (2,125,000 lb) Variable Position Counterweight (VPC)
360° Rating kg (lb) x 1 000

70° Boom angle

55,0 m (180.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
46,0 (150)	706 (1568)			
52,0 (170)	606 (1343)			
58,0 (190)	528 (1167)	516 (1141)		
68,0 (220)		421 (946)		
76,0 (250)		363 (798)	310 (684)	
86,0 (280)		– (588)	293 (655)	153 (339)
94,0 (310)			240 (523)	153 (339)
104,0 (340)			188 (418)	153 (339)
114,0 (375)				140 (308)
126,0 (410)				103 (234)
138,0 (455)				66 (136)

65,0 m (213.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
50,0 (160)	621 (1411)			
54,0 (180)	564 (1219)			
64,0 (210)	453 (998)	442 (975)		
74,0 (240)		366 (820)	283 (624)	
82,0 (270)		318 (698)	283 (624)	
92,0 (300)			258 (575)	141 (311)
100,0 (330)			228 (498)	141 (311)
110,0 (360)			175 (392)	141 (311)
118,0 (390)				141 (311)
130,0 (425)				109 (245)
140,0 (465)				74 (141)

75,0 m (246.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
54,0 (175)	548 (1226)			
60,0 (195)	479 (1070)			
68,0 (220)	– (913)	395 (887)		
74,0 (245)		353 (770)		
82,0 (270)		307 (675)	257 (566)	
92,0 (300)		– (579)	247 (551)	129 (284)
100,0 (330)			216 (472)	129 (284)
106,0 (350)			195 (426)	129 (284)
116,0 (380)			– (330)	129 (284)
132,0 (430)				104 (235)
146,0 (480)				55 (116)

85,0 m (279.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
58,0 (185)	484 (1106)			
64,0 (210)	427 (941)			
72,0 (235)	– (806)	352 (782)		
80,0 (260)		305 (683)		
86,0 (285)		276 (601)	236 (520)	
94,0 (310)		241 (527)	225 (492)	– (257)
102,0 (335)			196 (431)	116 (257)
110,0 (360)			170 (378)	116 (257)
118,0 (390)			147 (319)	116 (257)
134,0 (440)				89 (197)
148,0 (490)				64 (130)

95,0 m (312.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)	84,0 (276.0)	114,0 (374.0)
60,0 (195)	446 (996)			
64,0 (210)	411 (906)			
68,0 (225)	379 (828)			
74,0 (245)	338 (735)	324 (707)		
82,0 (270)		279 (612)		
90,0 (295)		241 (532)	211 (45)	
100,0 (325)		– (447)	183 (412)	106 (235)
110,0 (360)			153 (340)	106 (235)
122,0 (400)			– (269)	98 (217)
136,0 (445)				71 (158)
150,0 (495)				48 (103)

105,0 m (344.0 ft) Luffing jib length

Boom m (ft) / Radius	36,0 (118.0)	60,0 (197.0)
64,0 (205)	388 (886)	
68,0 (220)	356 (802)	
72,0 (235)	328 (729)	
78,0 (255)	– (641)	274 (609)
84,0 (275)		244 (541)
90,0 (295)		219 (483)
96,0 (315)		196 (432)
102,0 (335)		174 (383)

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