

TRUCK CRANE OPERATOR'S MANUAL

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ZTC1600H833 Truck Crane Operator's Manual

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To Users

Zoomlion appreciates your selection of ZOOMLION truck crane.

No one should operate the crane unless he reads and understands the information in this manual.

This manual contains instructions and data on safety and operation of the truck crane. Follow the operation procedures to make sure that your machine operates at MAXIMUM EFFICIENCY. The operator must keep this manual in the cab of the crane.

If there is anything in the manual that is not clear or you do not understand, please contact our service technician. We (Zoomlion) are NOT responsible for damages caused by an operator who fails to observe the instructions in the *OPERATOR'S MANUAL*.

The *OPERATOR'S MANUAL* is an indispensable part of the crane. If the crane becomes the property of a different person, make sure that the manual stays in the cab of the crane.

The information (data, specifications, illustrations) in this manual is for cranes in production at the time of this manual's publication. It is subject to changes due to continuous improvement and upgrading, without prior notification.

The manual has been translated to be best of our knowledge. Zoomlion assumes no responsibility for translation errors. The Chinese version of the *OPERATOR'S MANUAL* is solely applicable for factual accuracy.

Thank you!

Mobile Crane Branch Company of Zoomlion Heavy Industry Science and Technology Co., Ltd.

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Safety Instructions

DANGER, WARNING, CAUTION and NOTICE labels are provided in signs and decals, as well as in texts of this manual to show important instructions. In this manual, the labels are followed by the paragraph or item they apply to. The markers are as follows:



Refers to a dangerous situation which, if not avoided, will cause death or injury.



Refers to a possible dangerous situation which, if not avoided, could cause death or injury.



Refers to a possible dangerous situation which, if not avoided, may cause light or moderate injury.

NOTICE

Refers to a situation which, if not avoided, may cause property or equipment damage.

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Truck Crane Operator'S Manual

Chapter 1 Description of Crane



Chapter 1 Description of Crane

1.1 Models and name plates

1.1.1 Models

Model in auto industry: ZTC1600H833

Model in engineering industry: ZTC1600H

Chassis model: ZLJ5605JQZV6

1.1.2 Name plates

For name plate of crane, refer to Figure 1-1.

For name plate of chassis, refer to Figure 1-2.

ZOOMLION		汽车起重机 TRUCK CRANE	
品牌及型号	Trade Mark & Model	中联牌	ZTC1600H
产品特征号	Product Characteristic Code	ZTC1600H833	
最大额定总质量×工作幅度	Max. Rated Lifting Capacity × Working Radius	160000 kg	3 m
发动机型号	Engine Model	WP12.460E62	
发动机额定功率	Engine Rated Power	338	kW
发动机最大净功率/转速	Max. Engine Net Power/RPM	333 kW	1900 rpm
最大允许总质量	Max. Authorized Total Mass	54900	kg
整车整备质量	Complete Vehicle Kerb Mass	54705	kg
外形尺寸 (长×宽×高)	Overall Dimensions	16640 mm	3000 mm × 4000 mm
车辆识别代号	VIN		
出厂编号	Production No.		
生产日期	Production Date	年(Y.)	月(M.)
制造国	Production Country	中国	China

中联重科股份有限公司制造
MANUFACTURER: ZOOMLION HEAVY INDUSTRY & SCIENCE TECHNOLOGY CO., LTD

Figure 1-1 Name plate of crane

ZOOMLION		汽车起重机专用底盘 TRUCK CRANE SPECIAL PURPOSE CHASSIS	
品牌及型号	Trade Mark & Model	中联牌	ZLJ5605JQZV6
产品特征号	Product Characteristic Code	ZLJ5605JQZV6	
最大允许总质量	Max. Authorized Total Mass	60000	kg
整车整备质量	Complete Vehicle Kerb Mass	23350	kg
发动机型号	Engine Model	WP12.460E62	
发动机额定功率	Engine Rated Power	338	kW
发动机最大净功率/转速	Max. Engine Net Power/RPM	333 kW	1900 rpm
车辆识别代号	VIN		
出厂编号	Production No.		
生产日期	Production Date	年(Y.)	月(M.)
制造国	Production Country	中国	China

中联重科股份有限公司制造
MANUFACTURER: ZOOMLION HEAVY INDUSTRY & SCIENCE TECHNOLOGY CO., LTD

Figure 1-2 Name plate of chassis

1.1.3 Name plates installation locations

The name plate of crane is installed on the lower part of operator's cab. Refer to Figure 1-3.
 The name plate of chassis is installed on the right longitudinal beam of chassis frame. Refer to Figure 1-4.

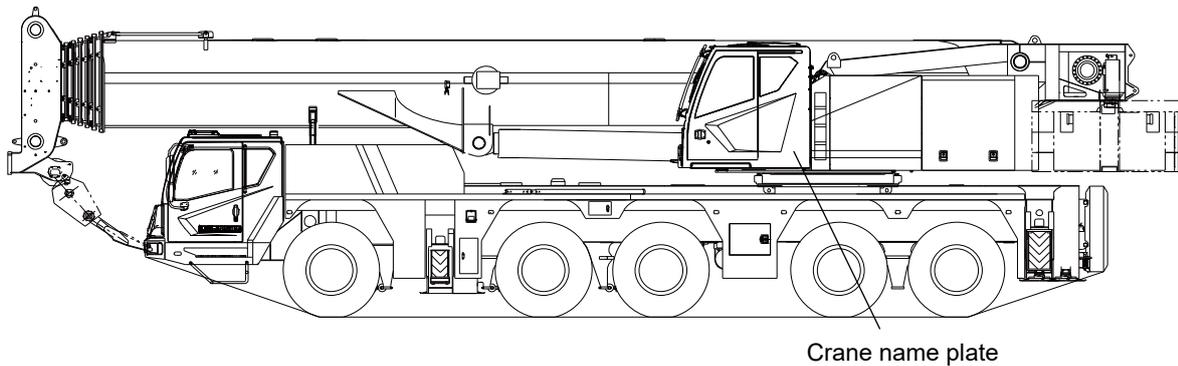


Figure 1-3 Crane name plate

1.1.4 Vehicle identification number (VIN) and its locations

The VIN of ZTC1600H863 is L5E6H5D4xxxxxxxxxx, and is stamped in the crane name plate, chassis name plate and right longitudinal beam of chassis frame.
 The exact location is shown in Figure 1-4.

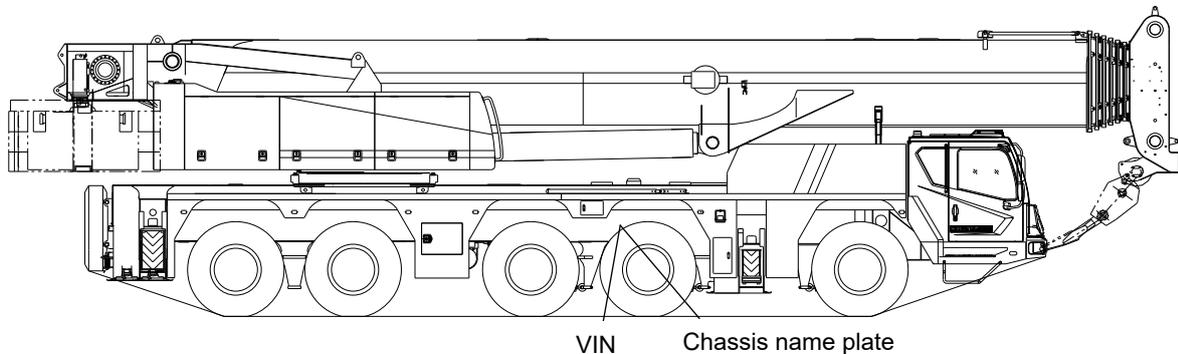


Figure 1-4 Chassis name plate

1.1.5 Engine model and its manufacturer

Engine model: WP12.460E62
 Manufacturer: WEICHAI POWER Co., Ltd.

1.1.6 Engine name plate installation location

The engine name plate is installed on the left upper part of the engine. The exact location is shown in Figure 1-5.

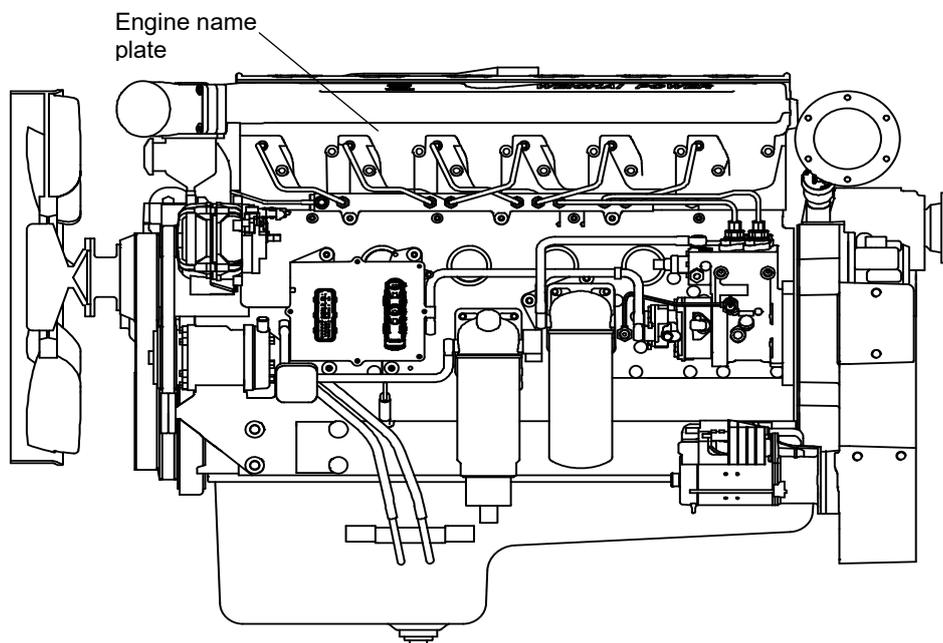


Figure 1-5 Engine name plate

Note: Have the above engine data available when communicating with us.

1.2 Crane components and product description

1.2.1 Crane components

For the locations of crane components, please refer to Figures 1-6-1 and 1-6-2.

For the description of crane components, please refer to Tables 1-1-1 and 1-1-2.

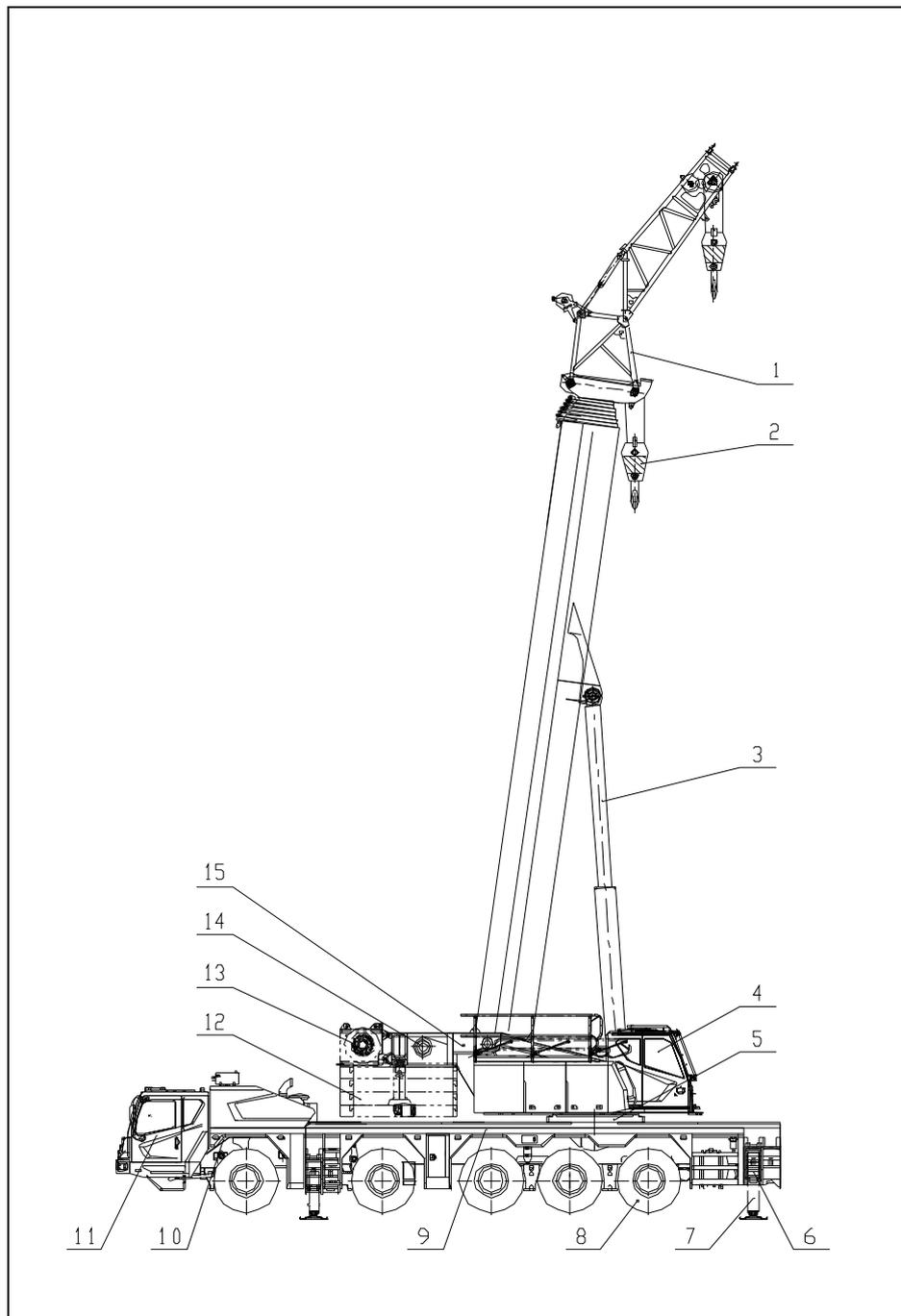


Figure 1-6-1 Crane main components I

Table 1-1-1 Crane main components I

Pos.	Description	Pos.	Description
1	Tip boom	9	5-axle chassis
2	Hook block	10	Engine, chassis
3	Derricking gear	11	Driver's cab
4	Operator's cab	12	Counterweight
5	Slewing gear	13	Auxiliary winch
6	Sliding beam	14	Main winch
7	Outrigger	15	Slewing table
8	Tire		

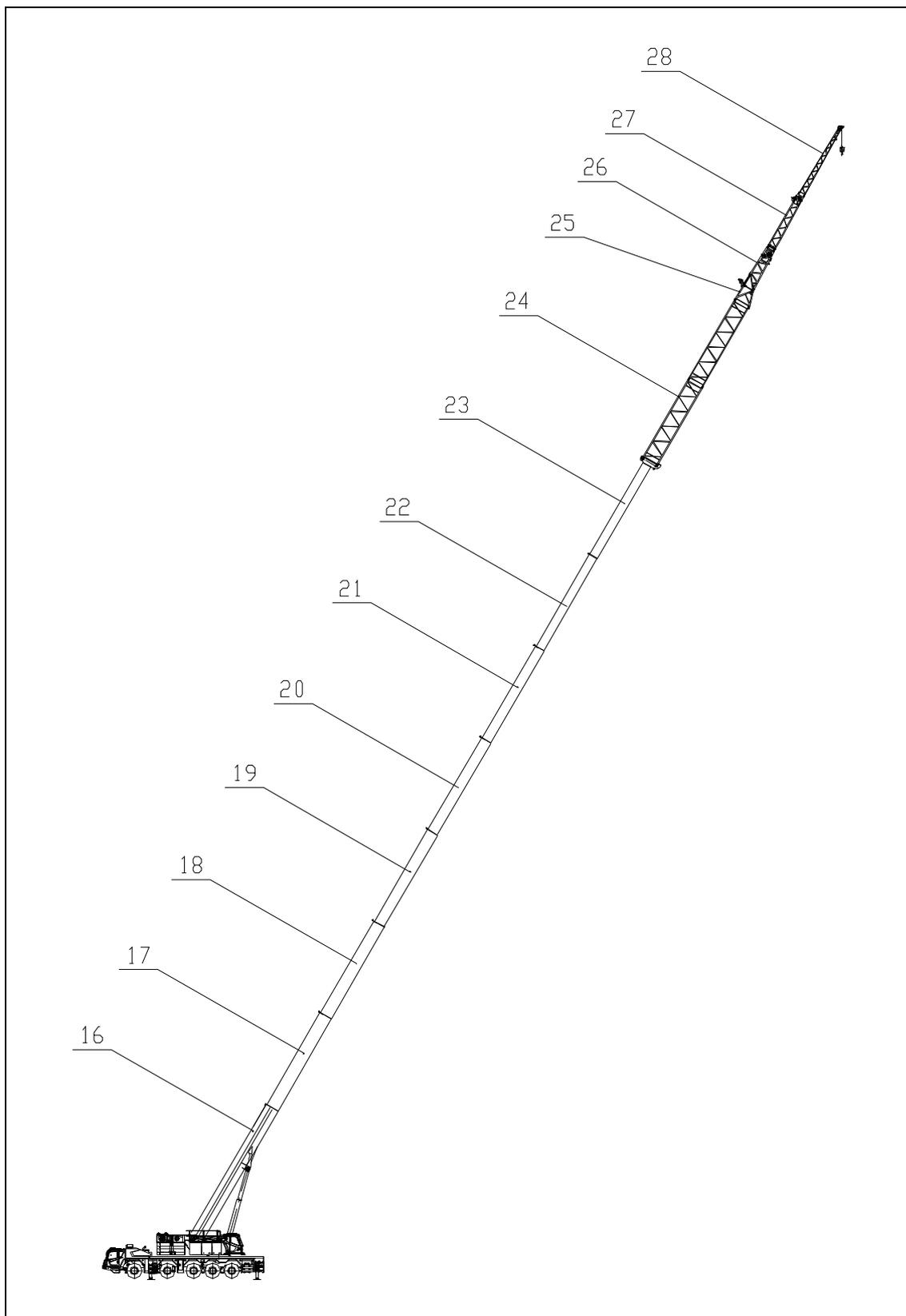


Figure 1-6-2 Crane main components II

Table 1-1-2 Crane main components II

Pos.	Description	Pos.	Description
16	Basic boom	23	Telescopic section VII
17	Telescopic section I	24	Extension
18	Telescopic section II	25	Adapter I
19	Telescopic section III	26	Adapter II
20	Telescopic section IV	27	Jib section 1
21	Telescopic section V	28	Jib section 2
22	Telescopic section VI		

1.2.2 Product description

1.2.2.1 Crane chassis

Driver's cab	<p>Full-width spacious cab made of thin metal plate, with the following features:</p> <ul style="list-style-type: none"> – Safety glass – 3 seats with upper backrests & armrests, driver's seat cushioned pneumatically – Seat belts, height and inclination adjustable steering wheel – Electronic instruments, buttons, control lights – Cigarette lighter, hat-and-coat hook – Fire extinguisher, VCD – Rearview camera – Electrically controlled combination air conditioning & cab heater.
Chassis frame	Distortion-resistant box structure welded from high-tensile steel
Engine	<p>Weichai WP12.460E62, water-cooling, 6-cylinder in-line diesel, four-stroke, turbo-charged, intercooled</p> <p>Maximum net power: 333 kW / 1900r/min</p> <p>Rated power/RPM: 338 kW / 1900 r/min</p> <p>Maximum output torque/RPM: 2110 N.m / 1000 – 1400 r/min.</p> <p>Fuel tank: 500 L</p>
Sliding beam	2-section sliding beams, extendable and retractable simultaneously
Clutch	<p>Maintenance-free, dry single-plate pull-type clutch manufactured by SACHS</p> <p>Service life: about 100,000 km to 150,000 km</p>
Transmission	<p>12 gears</p> <p>12JZSD220A transmission system with automatic switching system manufactured by Shaanxi Fast Auto Drive Co., Ltd.</p>
Transfer case	<p>2-stage transfer case, manufactured by Zhuzhou Gear Co., Ltd.</p> <p>With two stand-by steering pump</p>
Axles	<p>Axle 4 with longitudinal and transversal differentials as well as differential lock</p> <p>Axles 2 and 5 with transversal differential and differential lock</p>
Suspension	Front suspension adopts the hydro-pneumatic suspension structure and rear suspension adopts the leaf spring and the balance beam structure. Number of the leaf spring: 0-0/7-7-7.
Tires	<p>All axles with single tire</p> <p>Tire size: 385/95R24 (homemade)</p> <p>Tire pressure: 900 KPa</p>
Steering	SF100-01 steering gear, manufactured by Jiangmen Xingjiang Steering Gear Co.,

Ltd. or Nantong Global Steering Gear Manufacturing Co., Ltd.

Axles 1, 2 and 5 are steered.

Maximum inner wheel steering angle of axle 1 is 39°.

Adopt 6 pieces of steering cylinders in order to improve the force condition of the drag link of the steering mechanism.

The steering cylinders are located on the the steering axles. And the left side and the right side each have one piece of steering cylinder.

Brakes

It consists of service brake, parking brake (emergency brake) and auxiliary brake.

Service brake: acting on all wheels

Parking brake: acting on axles 3, 4 and 5

Auxiliary brake: engine compression brake and exhaust brake

ABS

With ABS

Electrical system

24 Volt DC, 2 batteries, each with 200 Ah

Lighting system complies with National Standards, equipped with sliding beam illumination.

Air conditioning

Combined air conditioning & cab heater

Platform

All aluminium alloy platform with aluminium alloy forming molding

Drive type

10 × 6

Axles 2, 4 and 5 are steer and drive.

1.2.2.2 Crane superstructure

Operator's cab All superstructure switches and display units are arranged in it. Equipped with safety glass

The cab can be tilted backwards for 20° during operation.

Main boom 1 basic boom and 7 telescopic sections

All telescopic sections are hydraulically extendable independently of each other via the rapid-cycle single cylinder telescoping system with hydraulic interlocking device.

Telescopic boom length: 14.1 m to 85 m

Slewing table High-tailed, distortion-resistant box structure, providing unlimited horizontal rotation for superstructure components

Crane drive The superstructure oil pump is located on the chassis.

Chassis engine → transmission → propeller shaft → superstructure oil pump

Controls Modern CAN bus technology, computer integrated control, engine load-limit control, computer monitoring diagnosis, electron pedal

Variable hydraulic system for open and closed loop operation, with

	electro-hydraulic proportional control
	Two 4-way joysticks, self-centering, realizing infinitely variable control of all crane movements
Safety system	Load moment limiter overload protection system, balance valves to prevent pipe and hose breakage, hoisting limit switch and lowering limit switch
Derricking gear	One hydraulic cylinder with a balance valve lifts and lowers the boom from -0.5° to 82°.
Hoist gear	It consists of two winches: main and auxiliary winches. Hydraulic motor with planetary reducer and brake Main winch is driven by a variable motor and auxiliary winch is driven by a variable motor. Wire rope diameter: $\varnothing 20$ mm
Slewing gear	Slewing drive device, constant hydraulic motor, planetary reducer and brake The crane is equipped with dual slewing gears.
Electrical system	24 Volt DC, 2 batteries, each with 180 Ah
Counterweight	6 moveable counterweight plates can be assembled and disassembled by the counterweight handler on the tail of slewing table. Total weight: 60 t Weight variants: 0 t, 12 t, 22 t, 32 t, 42 t, 64 t
Hook block	5 hooks The maximum rated lifting capacity: 130 t (optional), 110 t (optional), 70 t straight shank hooks with one point (standard configuration), 70 t straight shank with ramshorn hook (optional), 25 t (optional) and 9 t (1 reeving, standard configuration)
Central lubricating system	All the lubricating points are automatically supplied with the correct grease quantity.

1.2.2.3 Additional equipment

- Jib assy.** 2-section reduction-structured quadrilateral lattice jib, can be attached below 0°, 15° or 30° in relation to the main boom via the adapter. The offset can be conveniently changed via the pins and pull bracket.
- Jib section II can be connected to / removed from jib section I via inserted pins. And it parallels to jib section I and can be folded at inserted pins when it is not used.
- There are four jib variants according to the operation requirements, namely jib variant 1(10.4 m), jib variant 2 (17.5 m), jib variant 3 (25.5 m, 1 section of extension) and jib variant 4 (33.5 m, 2 sections of extensions).
- The extension is 8 m long. And it is available for options. It should be used with the jib together.
- Jib section 1 is articulated to the head of telescopic section VI via the adapter. The jib is not attached with the vehicle during driving. During the short-distance transit, it can be folded on the side of main boom via inserted pins.
- Tip boom** Consisting of the adapter and the lattice component
- The lattice component is attachable below 0° or 30° in relation to the adapter.
- When the operation does not use the tip boom, assemble the lattice component at an angle of 0° to the adapter and install it in front of main boom.
- Before you begin a lift operation, assemble the tip boom at an angle of 30° to the adapter.
- The tip boom is not attached with the vehicle during driving. And the tip boom is available for options.
- Rooster sheave** Inserted at the head of telescopic section VII, 1 time
- This option is set up for rapid hoists over the boom nose to improve the working efficiency when the loads are light.
- Air conditioning** Separate air conditionings and cab heaters for operator's cab and driver's cab

1.2.3 Boom

Including main boom, jib and jib extension

1.2.3.1 Main boom

1 basic boom and 7 telescopic sections

Main boom length (L): 14.1 m to 85 m

Refer to Figure 1-7.

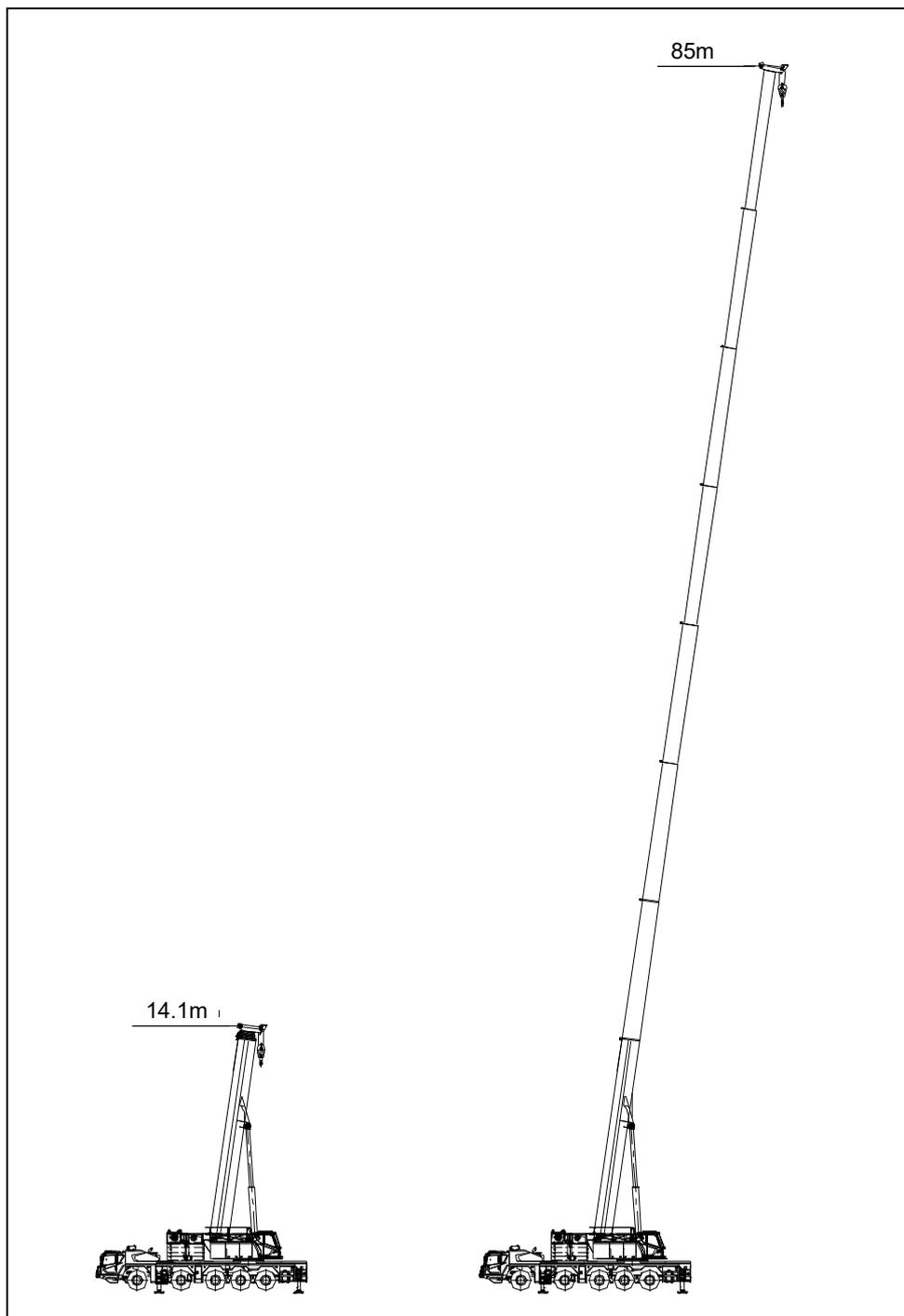


Figure 1-7 Main boom

1.2.3.2 Main boom + jib

3 offsets: 0°, 15° or 30°

Note:

Extension length: 8 m

Adapter I length: 1.5 m

Adapter II length: 3.4 m

Jib section 1 length: 5.5 m

Jib section 2 length: 7.1 m

1.2.3.2.1 Main boom + jib variant 1 (10.4 m)

Boom lengths:

- Boom length 1 (L) = 73.9 m + 10.4 m = 84.3 m
- Boom length 2 (L) = 78.5 m + 10.4 m = 88.9 m

Refer to Figure 1-8.

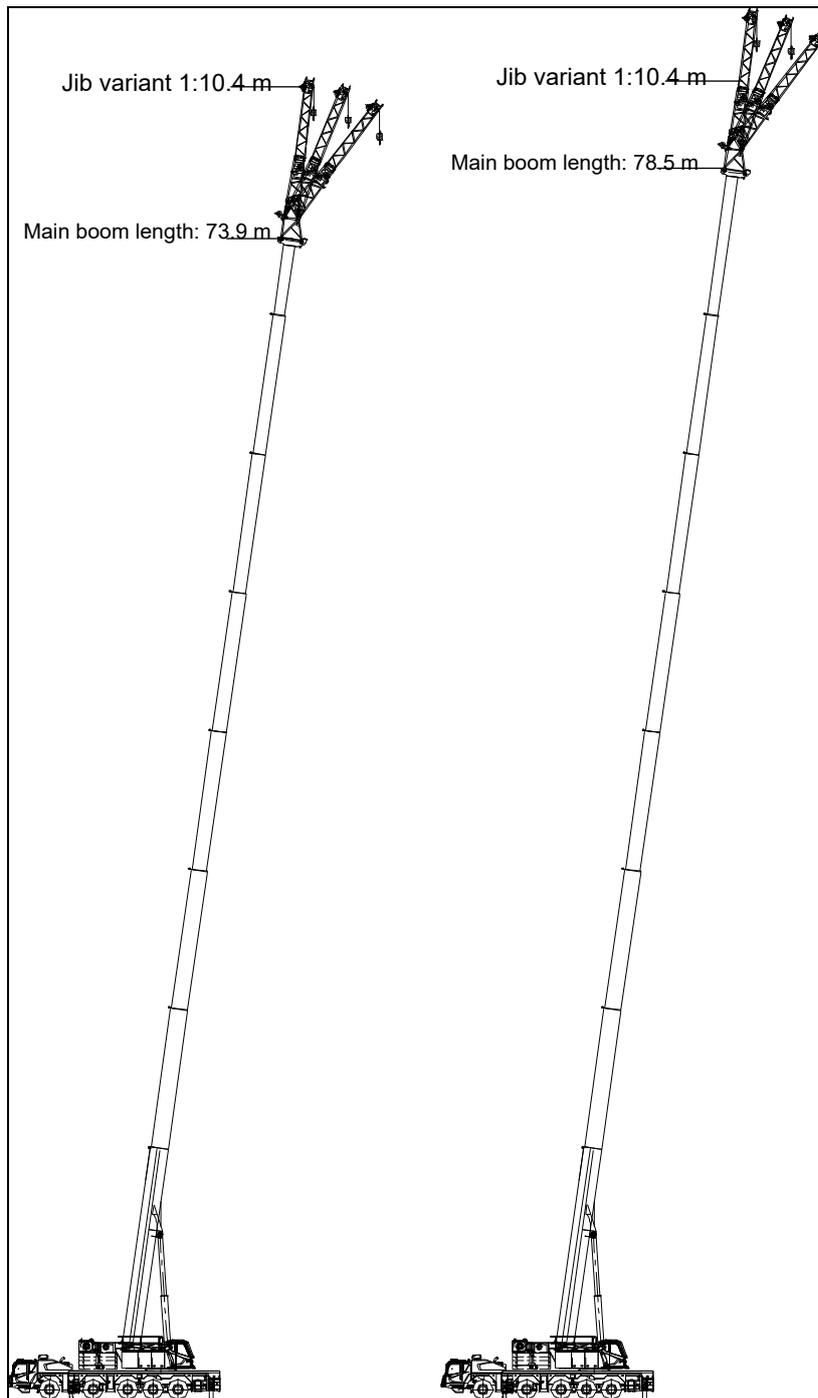


Figure 1-8 Main boom + jib variant 1 (10.4 m)

1.2.3.2.2 Main boom + jib variant 2 (17.5 m)

Boom lengths:

- Boom length 1 (L) = 73.9 m + 17.5 m = 91.4 m
- Boom length 2 (L) = 78.5 m + 17.5 m = 96 m

Refer to Figure 1-9.

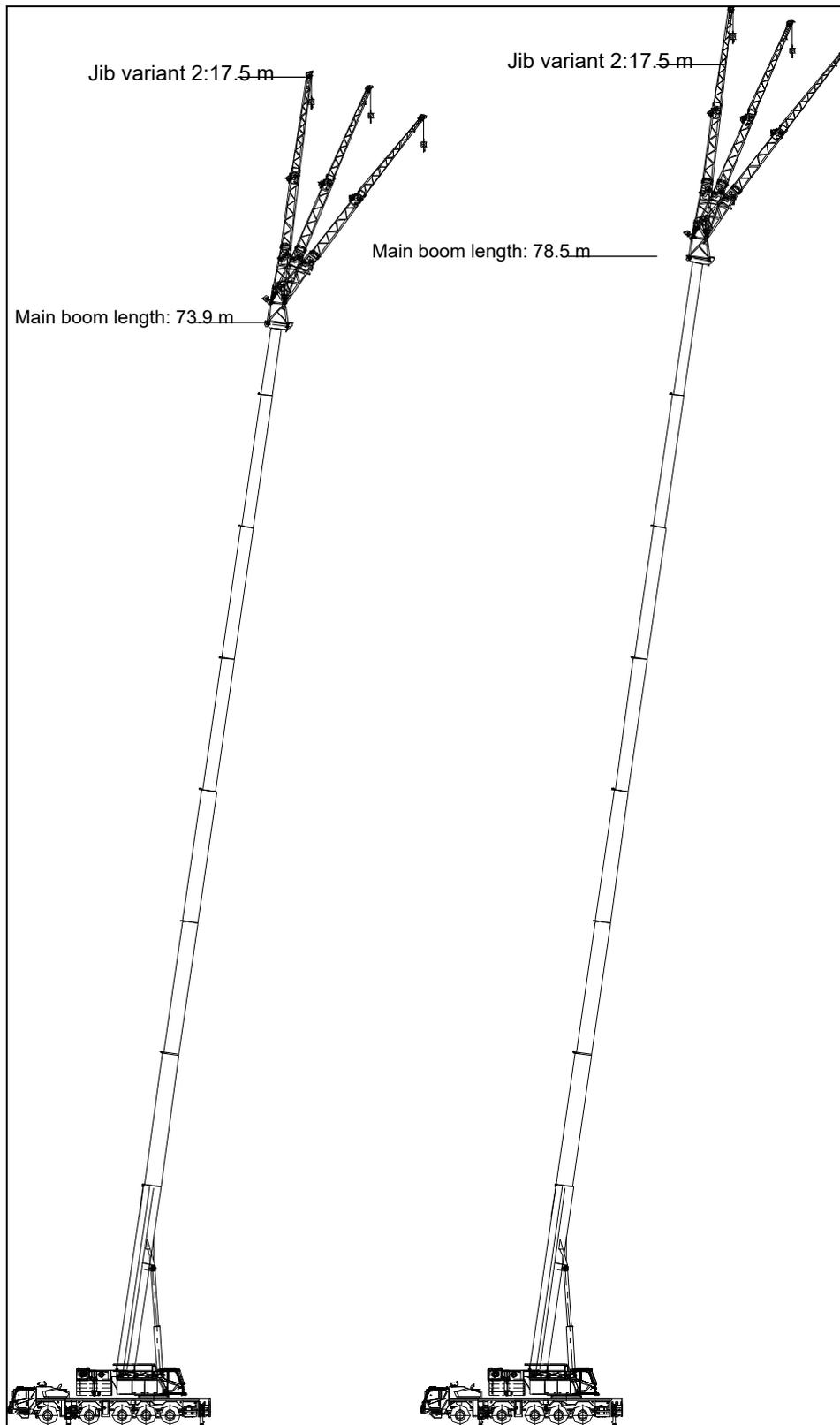


Figure 1-9 Main boom + jib variant 2 (17.5 m)

1.2.3.2.3 Main boom + jib variant 3 (25.5 m)

Boom lengths:

- Boom length 1 (L) = 73.9 m + 8 m + 17.5 m = 99.4 m
- Boom length 2 (L) = 78.5 m + 8 m + 17.5 m = 104 m

Refer to Figure 1-10.

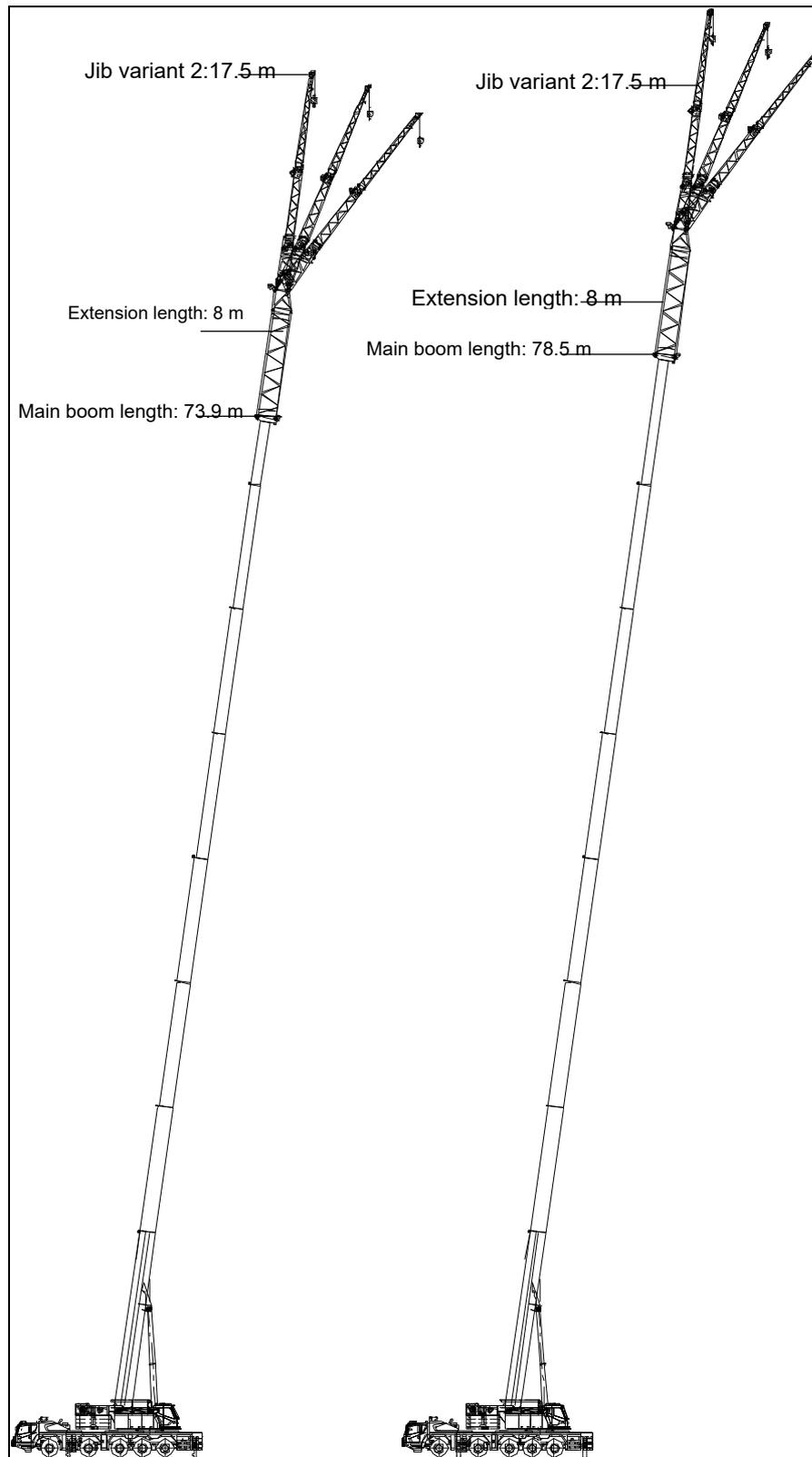


Figure 1-10 Main boom + jib variant 3 (25.5 m)

1.2.3.2.4 Main boom + jib variant 4 (33.5 m)

Boom lengths:

- Boom length 1 (L) = 73.9 m + 8 m + 8 m + 17.5 m = 107.4 m
- Boom length 2 (L) = 78.5 m + 8 m + 8 m + 17.5 m = 112 m

Refer to Figure 1-11.

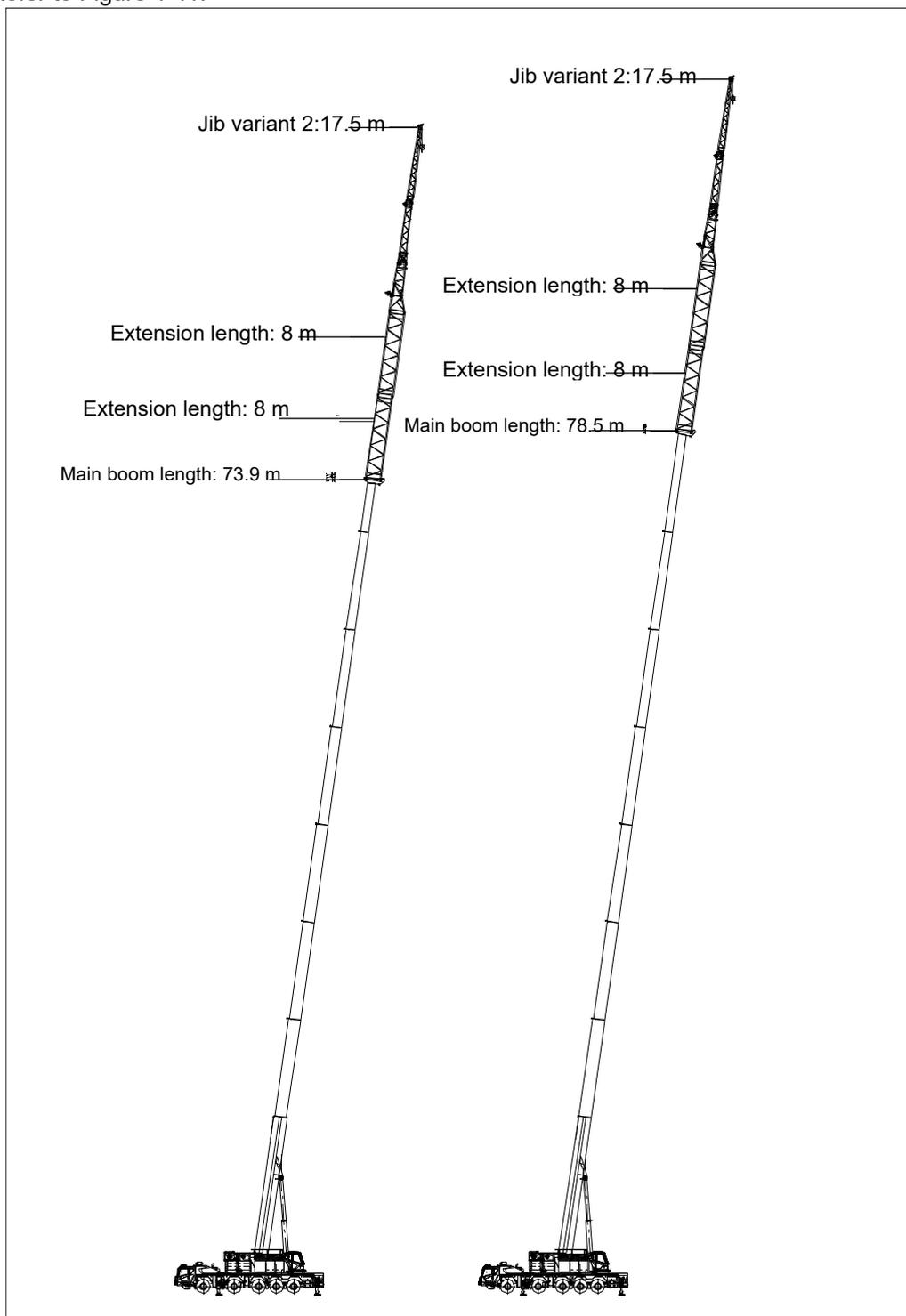


Figure 1-11 Main boom + jib variant 4 (33.5 m)

1.2.3.2.4 Main boom + tip boom

The combination of the main boom in different length variants and the tip boom can meet your needs. Refer to Figure 1-12.

Note: Before you begin a lift operation with the tip boom, assemble it in an offset of 30°

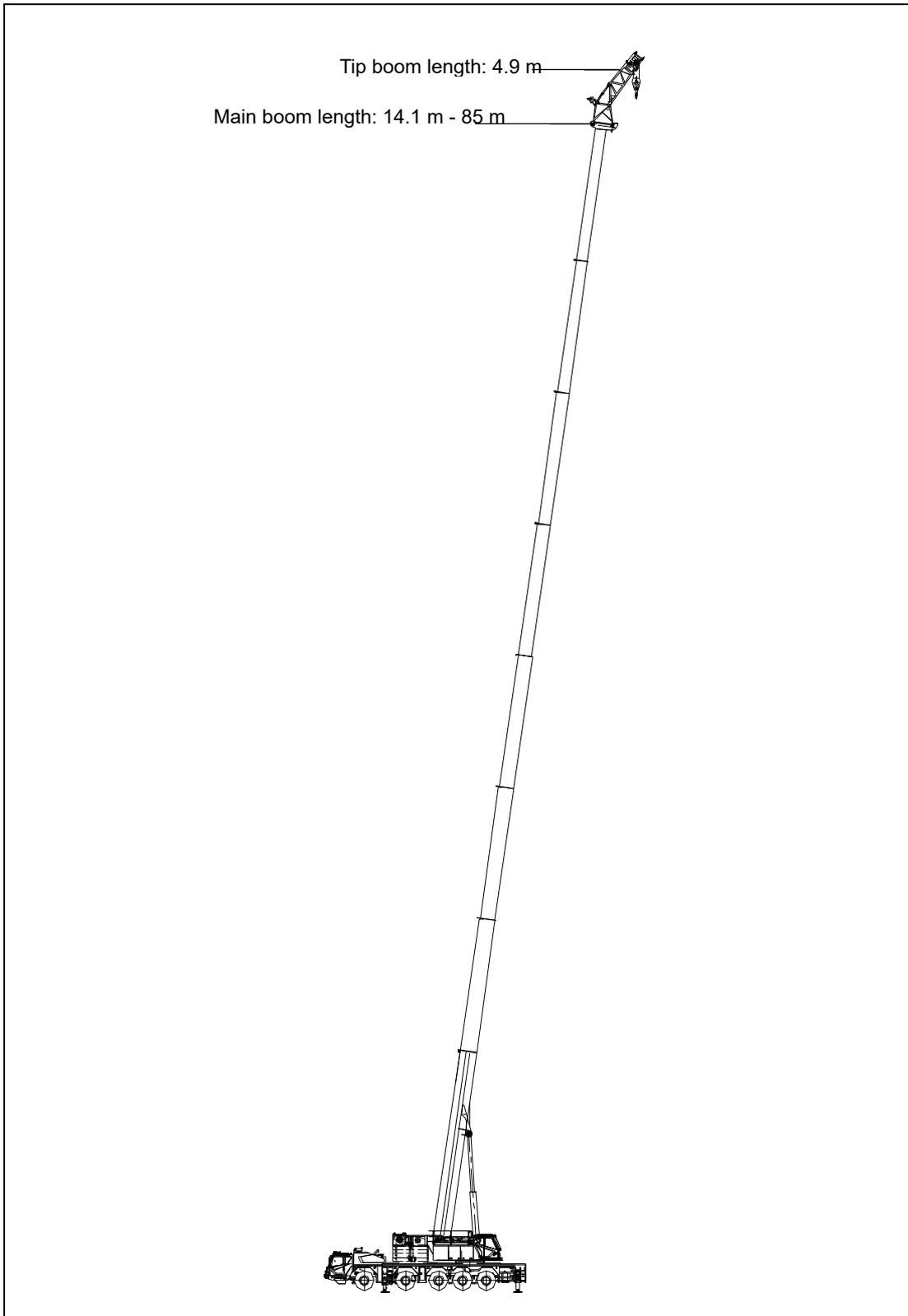


Figure 1-12 Main boom + tip boom

1.3 Technical data

1.3.1 Dimensions

Unit: Metric mm

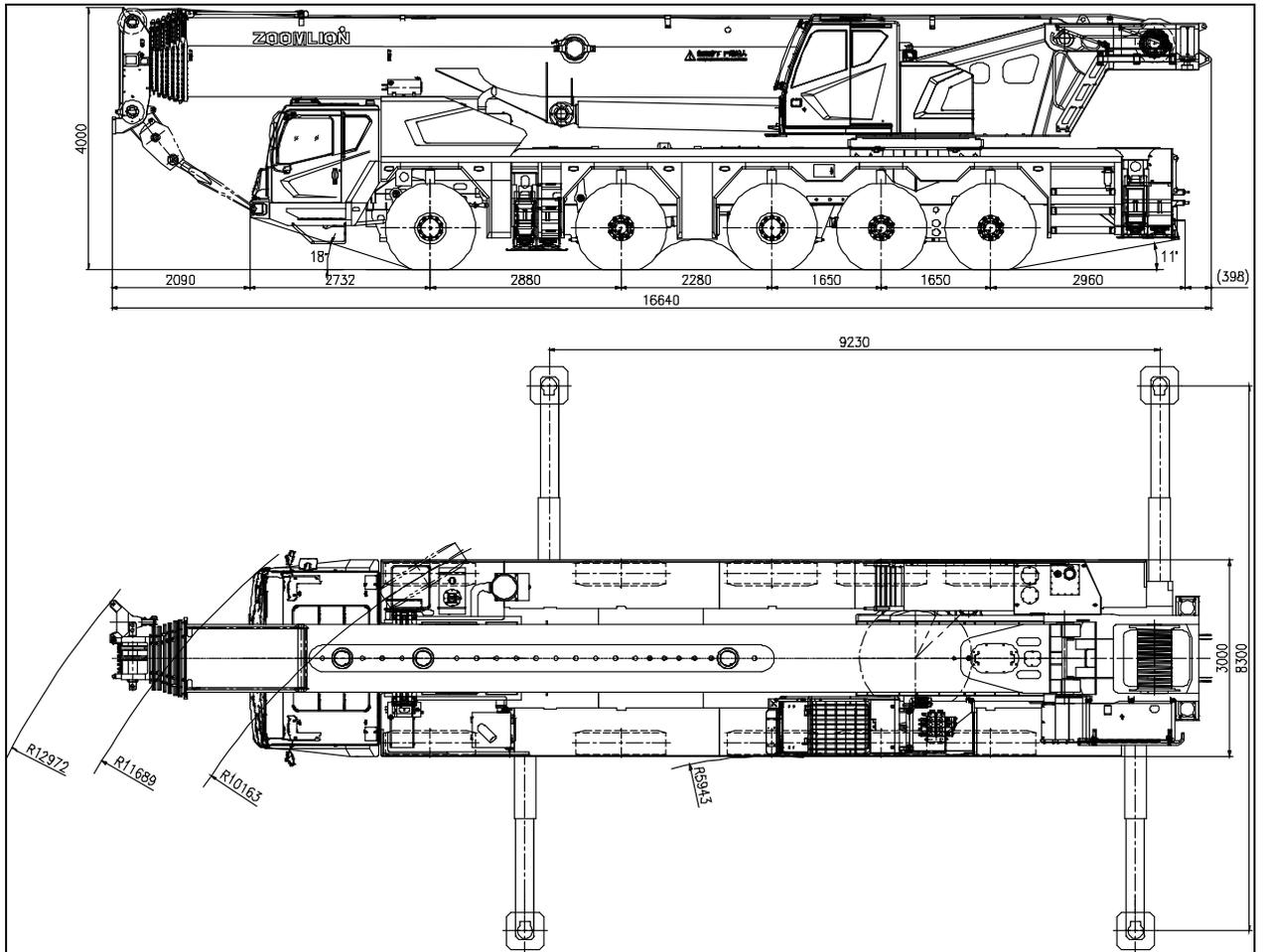


Figure 1-13 Dimensions

1.3.2 Rope diameter & length

Refer to Table 1-2.

Table 1-2 Rope diameter & length

Type of rope	Diameter (mm)	Length (m)
Main hoist rope	Φ20	360
Auxiliary hoist rope	Φ20	245

1.3.3 Lifting capacity

Refer to Table 1-3.

Table 1-3 Lifting capacity

Maximum rated lifting capacity (kg)	Maximum load moment of basic boom (kN.m)	Maximum load moment of the longest main boom (kN.m)
160000	5292	2069

1.3.4 Lifting height

Refer to Table 1-4.

Table 1-4 Lifting height

Unit: Metric m

Maximum lifting height of basic boom	Maximum lifting height of the longest main boom	Maximum lifting height of jib
14.0	85	112

1.3.5 Axle loads

In order to maintain 54900 kg crane deadweight, you should dismantle the items below to avoid axle overload before driving:

- Hook block
- Rooster sheave
- Jib and jib bracket
- Tip boom
- Main hoist ropes
- Auxiliary winch (including auxiliary hoist ropes)
- Counterweight lifting cylinders
- Sliding beams (including the cylinders)
- Outrigger pads

- Counterweight etc.

For the axle loads with 54900 kg crane deadweight, refer to Table 1-5.

For the driving conditions, refer to Chapter 3.

Table 1-5 Axle loads

Unit: kg

Axle	1	2	3	4	5	Total weight
Weight	11970	11970	10320	10320	10320	54900

1.3.6 Wheel alignment

Refer to Table 1-6.

Table 1-6 Wheel alignment

Unit: °

Axle	1	2	4	5
King pin inclination angle	5	5	5	5
King pin caster angle	0	0	0	0
Wheel camber angle	1	1	1	1

1.3.7 Protection devices

Materials: cold-drawn 08 and HG 785 steels

Chassis protection devices (Refer to Figure 1-14.):

- Side protection:
 - Ladder
 - Guard plate
 - Mudguard
 - Outrigger boxes, etc.
- Rear protection:
 - Rear outrigger boxes
 - Special devices on the tail of chassis frame.

Unit: mm

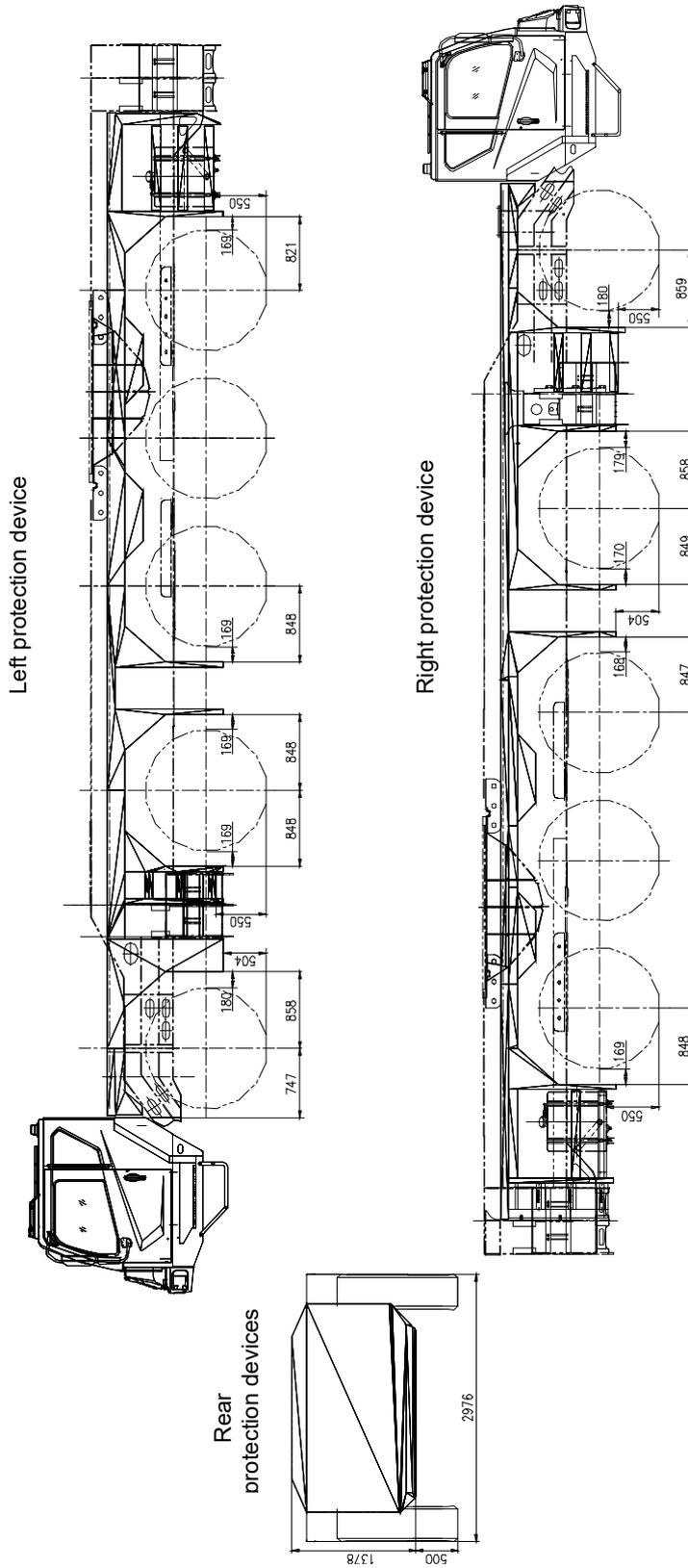


Figure 1-14 Protection devices

1.3.8 Hook

Refer to Table 1-7.

Table 1-7 Hook configurations

Model (tons)	Number of pulley	Max. reeving	Weight (kg)	Remarks
130	8	16	1480	Straight shank with ramshorn hook (optional)
110	7	14	1200	Straight shank with ramshorn hook (optional)
70	5	10	900	Straight shank with single hook (standard configuration)
70	5	10	928	Straight shank with ramshorn hook (optional)
25	1	3	580	Straight shank with single hook (optional)
9	0	1	380	Auxiliary hook (standard configuration)



If rope reevings are less than the value listed in the above table during lifting, examine the load on single wire rope to make sure that it is no more than the max. permissible lifting capacity of single wire rope.

1.3.9 Max. support strength per outrigger

Refer to Table 1-8.

Table 1-8 Max. support strength per outrigger

Unit: N

Front	Rear
715777	904720

1.3.10 Driving speeds in road driving condition

Refer to Table 1-9.

Table 1-9 Driving speeds in road driving condition

Road gear	1	2	3	4	5	6	7	8	9	10	11	12
Speed (km/h)	5.7	7.3	9.4	12.0	15.4	19.7	25.3	32.5	41.8	53.6	68.6	80 (limit the speed to 80 km/h)
Road gear	R1							Maximum gradeability				
Speed (km/h)	5.9							47% (The height above sea level ≤ 2000 m)				
Min. ground clearance	380 mm											
Min. turning diameter	20.4m											
Min. brake distance ≤ 10 m (At an initial speed of 30 km/h)												

1.3.11 Crane speeds

The drives on crane superstructure can realize infinitely variable control. Refer to Table 1-10.

Table 1-10 Crane speeds

Drives	Speeds	Remarks
Max. hoist rope speed (main winch)	135m/min	Drum 5 th layer
Max. hoist rope speed (auxiliary winch)	120m/min	Drum 3 rd layer
Slewing gear	0 r/min - 1.5r/min	
Derricking gear	70 seconds	-0.5° to 82°.
Telescoping system	Approx. 750 s	14.1 m to 85 m Affected by temperature and engine RPM

1.3.12 Energy consumption and environmental protection

Refer to Table 1-11.

Table 1-11 Energy consumption and environmental protection

Engine	Limits for exhaust pollutants and smoke	Fuel consumption	Fuel standards
Chassis	GB3847-2018 GB17691-2018 Stage VI	65 L/100 km (The height above sea level ≤ 2000 m)	Diesel oil (China VI and above)

1.3.13 Emission value in engine workplace

Refer to Table 1-12.

Table 1-12 Emission value in engine workplace

Unit: db

Sound pressure level at nominal RPM	Noise	
	Left ear	Right ear
Driver's cab, driver's side	87	87
Driver's cab, passenger's side	87	
Operator's cab	87	87

1.3.14 Lifting capacity tables

For the lifting capacity tables for main boom, please refer to Table 1-13 to 1-23.

For the lifting capacity tables for main boom + jib, please refer to Table 1-24 to 1-28.

For the lifting capacity tables for main boom + tip boom, please refer to Table 1-29 to 1-32.

Note:

The jib is not attached with the main boom.

The lifting capacity marked with the asterisk (*), namely 160t, is a nominal lifting capacity. You should adopt 160t hook and 18 rope reevings. The pulley should be individually added on the boom head.

Table 1-13 Main boom

Unit: Metric tons

Working radius (m)	Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range														Working radius (m)	
	Boom length (m)															
	14.1★	18.7	18.7	18.7	18.7	18.7	18.7★	23.3	23.3	23.3	23.3	23.3	23.3	23.3★		
3.0	160*	40.5	69.0	74.3	95.0	105.0	110.0	21.8	43.4	52.2	74.2	92.0	96.0	100.0	3.0	
3.5	115.0	38.8	64.4	69.6	93.0	100.0	105.0	20.7	41.8	49.0	69.7	86.5	94.0	96.0	3.5	
4.0	105.0	37.2	60.2	65.2	91.0	96.0	100.0	19.7	40.6	46.2	66.0	83.0	92.0	92.0	4.0	
4.5	100.0	35.9	56.8	61.4	86.4	93.0	95.0	18.8	39.3	43.9	62.6	79.4	88.0	88.0	4.5	
5.0	95.0	34.7	54.0	58.3	81.7	90.0	90.0	18.0	38.2	41.7	59.5	75.8	84.0	84.0	5.0	
5.5	90.0	33.6	51.3	55.4	77.9	86.0	86.0	17.3	36.5	39.8	56.8	72.2	80.0	80.0	5.5	
6.0	85.3	32.7	48.9	52.8	74.3	83.0	84.0	16.6	34.9	38.0	54.3	68.8	77.0	77.0	6.0	
7.0	75.2	30.5	44.3	47.8	67.2	72.50	73.0	15.3	31.9	34.6	49.4	62.5	69.0	69.0	7.0	
8.0	67.5	28.7	40.7	43.8	61.7	65.0	66.0	14.2	29.4	31.9	45.6	57.2	62.0	62.0	8.0	
9.0	59.0	27.2	37.6	40.5	57.0	59.0	60.0	13.2	27.3	29.6	42.3	52.7	56.3	56.3	9.0	
10.0	52.0	25.9	35.0	37.6	53.0	54.0	54.5	12.4	25.4	27.5	39.4	49.0	51.4	51.4	10.0	
11.0		24.8	32.8	35.2	48.0	49.0	49.0	11.8	24.0	25.9	37.0	45.7	47.2	47.2	11.0	
12.0		23.8	30.9	33.1	44.0	44.0	44.0	11.2	22.6	24.3	34.8	43.0	44.0	44.0	12.0	
14.0		21.9	27.5	29.4	36.0	36.0	36.0	10.0	20.1	21.6	31.0	37.0	37.0	37.0	14.0	
16.0								9.1	18.2	19.5	27.9	31.0	31.0	31.0	16.0	
18.0								8.4	16.8	17.8	25.5	27.0	27.0	27.0	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	2	I	
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-13 Main boom (continued)

Unit: Metric tons

Description of Crane

Working radius (m)	Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range														Working radius (m)
	Boom length (m)														
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★	
3.0															3.0
3.5	23.5	21.7	44.4	56.5	75.0	85.0	85.0								3.5
4.0	22.4	20.4	42.0	53.6	71.4	83.0	83.0								4.0
4.5	21.5	19.4	39.8	51.0	68.2	81.0	81.0	17.3	21.9	25.7	44.5	56.9	75.0	75.0	4.5
5.0	20.7	18.4	37.8	48.7	65.3	78.0	78.0	16.3	20.8	24.3	42.2	54.2	72.0	72.0	5.0
5.5	19.9	17.5	36.0	46.6	62.7	75.0	75.0	15.4	19.7	23.1	40.2	51.8	69.0	70.0	5.5
6.0	19.2	16.7	34.4	44.7	60.3	71.2	73.0	14.6	18.7	21.9	38.3	49.6	66.0	68.0	6.0
7.0	17.8	15.2	31.3	41.1	55.5	64.5	68.0	13.2	17.1	19.9	35.0	45.6	61.0	65.0	7.0
8.0	16.5	13.9	28.8	38.0	51.4	58.8	63.0	12.1	15.7	18.2	32.2	42.2	56.0	60.0	8.0
9.0	15.6	12.9	26.7	35.4	48.0	53.9	58.0	11.1	14.5	16.8	29.8	39.3	52.0	56.0	9.0
10.0	14.6	11.9	24.8	33.1	45.0	49.7	53.0	10.3	13.5	15.6	27.8	36.8	48.0	53.0	10.0
11.0	13.8	11.1	23.2	31.1	42.4	46.5	48.0	9.6	12.6	14.5	26.0	34.7	45.0	47.0	11.0
12.0	13.2	10.5	21.9	29.5	40.2	43.5	43.5	9.0	11.9	13.6	24.5	32.7	42.0	43.0	12.0
14.0	12.0	9.3	19.4	26.3	36.0	37.0	37.0	8.0	10.6	12.1	21.9	29.4	37.0	37.0	14.0
16.0	11.0	8.3	17.4	23.7	33.0	32.0	32.0	7.1	9.5	10.8	19.6	26.5	32.0	32.0	16.0
18.0	9.8	7.3	15.4	21.2	27.6	27.0	27.0	6.3	8.6	9.7	17.8	24.2	26.5	26.0	18.0
20.0	8.9	6.5	13.9	19.1	23.5	22.5	22.0	5.6	7.8	8.8	16.3	22.3	23.5	23.0	20.0
22.0	8.1	5.8	12.6	17.4	20.5	19.5	19.0	5.0	7.0	7.9	14.9	20.5	20.5	20.0	22.0
24.0								4.5	6.4	7.2	13.7	18.5	18.0	17.2	24.0
26.0								4.1	5.8	6.5	12.6	16.5	16.0	14.8	26.0
28.0															28.0
30.0															30.0
32.0															32.0
34.0															34.0
36.0															36.0
38.0															38.0
40.0															40.0
42.0															42.0
44.0															44.0
46.0															46.0
48.0															48.0
50.0															50.0
52.0															52.0
54.0															54.0
56.0															56.0
58.0															58.0
60.0															60.0
62.0															62.0
64.0															64.0
66.0															66.0
68.0															68.0
70.0															70.0
Reeving	11							9							Reeving
Hook	90t														Hook
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	1	1	VII

Table 1-13 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1★	41.7	41.7	41.7	41.7	41.7	41.7	41.7★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5	16.5	20.6	23.4	29.4	42.6	56.0	65.0								5.5	
6.0	15.8	19.7	22.4	28.1	40.8	54.0	62.0								6.0	
7.0	14.4	17.9	20.4	25.6	37.6	50.0	59.0	15.7	19.2	22.4	27.3	33.5	42.3	52.0	7.0	
8.0	13.3	16.5	18.8	23.6	34.9	46.7	56.0	14.5	17.6	20.6	25.0	30.7	39.4	50.0	8.0	
9.0	12.3	15.2	17.3	21.8	32.5	43.9	52.0	13.4	16.2	19.1	23.0	28.3	36.8	47.5	9.0	
10.0	11.4	14.1	16.0	20.2	30.5	41.3	48.0	12.5	15.0	17.8	21.4	26.3	34.5	45.0	10.0	
11.0	10.6	13.1	14.9	18.8	28.7	39.0	44.0	11.7	14.0	16.6	19.9	24.5	32.4	42.5	11.0	
12.0	9.9	12.2	13.9	17.6	27.1	37.0	40.7	11.0	13.1	15.6	18.6	22.9	30.6	40.0	12.0	
14.0	8.8	10.8	12.3	15.6	24.2	33.3	35.0	9.8	11.5	13.8	16.4	20.2	27.4	34.5	14.0	
16.0	7.9	9.6	11.0	13.9	21.8	30.3	30.4	8.8	10.2	12.4	14.6	18.0	24.9	30.3	16.0	
18.0	7.2	8.6	9.9	12.5	19.9	27.7	25.8	8.0	9.1	11.2	13.1	16.2	22.8	27.0	18.0	
20.0	6.6	7.8	9.0	11.3	18.3	24.5	22.1	7.3	8.2	10.2	11.9	14.7	21.0	23.2	20.0	
22.0	6.0	7.1	8.2	10.4	16.9	22.0	20.6	6.7	7.5	9.4	10.9	13.5	19.5	20.2	22.0	
24.0	5.4	6.5	7.5	9.5	15.7	19.0	17.8	6.1	6.8	8.5	9.9	12.3	18.1	18.5	24.0	
26.0	4.9	5.9	6.8	8.6	14.6	16.8	15.6	5.5	6.2	7.8	9.0	11.2	16.9	16.5	26.0	
28.0	4.5	5.3	6.2	7.9	13.6	14.8	13.6	5.0	5.6	7.1	8.2	10.3	15.0	14.4	28.0	
30.0	4.1	4.8	5.6	7.2	12.7	13.2	11.9	4.5	5.1	6.5	7.5	9.5	13.3	12.7	30.0	
32.0								4.1	4.6	5.9	6.9	8.7	11.8	11.2	32.0	
34.0								3.7	4.2	5.4	6.3	8.0	10.5	10.0	34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-13 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3★	50.9	50.9	50.9	50.9	50.9	50.9	50.9★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22.0	26.5	31.7	32.7	42.0								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	30.4	39.7	14.8	17.9	20.8	25.8	27.7	31.5	35.4	9.0	
10.0	13.6	16.4	19.4	23.1	27.5	28.3	37.6	14.0	16.9	19.7	24.4	25.9	29.6	33.5	10.0	
11.0	12.8	15.4	18.3	21.8	25.7	26.4	35.7	13.2	15.9	18.6	23.0	24.2	27.9	31.7	11.0	
12.0	12.1	14.5	17.2	20.5	24.1	24.8	34.0	12.5	15.0	17.6	21.7	22.7	26.3	30.0	12.0	
14.0	10.8	12.8	15.3	18.2	21.4	22.0	30.9	11.2	13.3	15.8	19.4	20.1	23.4	26.9	14.0	
16.0	9.7	11.4	13.8	16.3	19.1	19.6	28.3	10.2	12.0	14.4	17.5	17.9	21.0	24.4	16.0	
18.0	8.8	10.3	12.4	14.7	17.2	17.6	26.1	9.4	11.0	13.2	15.7	16.0	19.0	22.1	18.0	
20.0	8.0	9.4	11.2	13.4	15.5	15.9	24.1	8.6	10.0	12.1	14.3	14.5	17.4	20.2	20.0	
22.0	7.3	8.6	10.3	12.3	14.1	14.5	21.9	7.9	9.2	11.1	13.0	13.1	15.9	18.6	22.0	
24.0	6.6	7.8	9.4	11.3	12.8	13.1	19.5	7.3	8.5	10.2	11.9	12.0	14.6	17.3	24.0	
26.0	6.0	7.1	8.5	10.3	11.6	11.9	17.0	6.7	7.9	9.4	10.9	11.0	13.5	16.0	26.0	
28.0	5.4	6.5	7.7	9.5	10.6	10.9	15.2	6.2	7.3	8.7	10.1	10.1	12.5	14.5	28.0	
30.0	4.9	5.9	7.0	8.7	9.7	10.0	13.5	5.7	6.7	8.0	9.3	9.3	11.6	12.5	30.0	
32.0	4.5	5.4	6.4	8.0	8.9	9.1	11.9	5.2	6.2	7.4	8.5	8.4	10.6	11.2	32.0	
34.0	4.1	5.0	5.9	7.4	8.2	8.4	10.7	4.8	5.7	6.8	7.8	7.7	9.8	9.8	34.0	
36.0	3.7	4.6	5.4	6.8	7.5	7.7	9.6	4.4	5.2	6.3	7.1	7.0	8.8	8.8	36.0	
38.0	3.4	4.2	5.0	6.3	6.9	7.1	8.6	4.0	4.8	5.8	6.5	6.4	8.3	7.9	38.0	
40.0								3.7	4.4	5.3	5.9	5.8	7.4	7.1	40.0	
42.0								3.4	4.0	4.9	5.4	5.3	6.6	6.2	42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Table 1-13 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	55.5	55.5	55.5	55.5	55.5	55.5★					60.1	60.1	60.1	60.1		60.1★
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0																8.0
9.0																9.0
10.0	14.4	17.3	20.7	24.3	27.1	29.8										10.0
11.0	13.7	16.4	19.7	22.9	25.6	28.3										11.0
12.0	13.0	15.6	18.8	21.5	24.2	26.9				12.8	15.7	18.7	21.4	23.3		12.0
14.0	11.7	14.0	17.0	19.1	21.6	24.3				11.7	14.3	17.2	19.3	21.2		14.0
16.0	10.7	12.7	15.6	17.1	19.5	22.2				10.8	13.2	15.7	17.5	19.4		16.0
18.0	9.8	11.6	14.3	15.3	17.6	20.2				9.9	12.1	14.2	15.9	17.8		18.0
20.0	9.1	10.6	13.2	13.8	16.0	18.5				9.2	11.2	12.9	14.6	16.4		20.0
22.0	8.4	9.8	12.2	12.5	14.7	17.1				8.6	10.4	11.7	13.4	15.1		22.0
24.0	7.8	9.1	11.3	11.4	13.5	15.8				8.1	9.7	10.7	12.3	14.0		24.0
26.0	7.2	8.5	10.5	10.5	12.4	14.6				7.6	9.1	9.9	11.4	13.0		26.0
28.0	6.7	7.9	9.7	9.6	11.4	13.4				7.1	8.5	9.1	10.5	12.0		28.0
30.0	6.3	7.4	8.9	8.8	10.5	12.4				6.6	8.0	8.4	9.7	11.1		30.0
32.0	5.8	6.9	8.2	8.1	9.7	11.0				6.2	7.6	7.8	9.0	10.3		32.0
34.0	5.4	6.4	7.5	7.4	9.0	9.8				5.9	7.2	7.2	8.4	9.5		34.0
36.0	5.0	5.9	6.9	6.7	8.3	8.8				5.6	6.8	6.6	7.8	8.6		36.0
38.0	4.6	5.4	6.3	6.1	7.6	7.9				5.2	6.3	6.0	7.2	7.9		38.0
40.0	4.2	5.0	5.8	5.6	7.0	7.0				4.8	5.8	5.5	6.6	7.1		40.0
42.0	3.9	4.6	5.3	5.1	6.2	6.2				4.5	5.3	5.0	6.1	6.3		42.0
44.0	3.6	4.2	4.8	4.6	5.7	5.5				4.2	4.9	4.6	5.6	5.6		44.0
46.0	3.3	3.9	4.4	4.2	5.2	4.8				3.9	4.5	4.2	5.1	5.0		46.0
48.0	3.0	3.6	4.0	3.8	4.6	4.2				3.6	4.1	3.8	4.6	4.3		48.0
50.0										3.3	3.7	3.4	4.3	3.8		50.0
52.0										3.0	3.4	3.1	3.9	3.3		52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	4							3							Reeving	
Hook	55t							25t							Hook	
Telescoping mode	I	1	1	1	1	2	3				1	1	1	2	3	I
	II	1	1	2	3	3	3				1	2	3	3	3	II
	III	2	3	3	3	3	2				3	3	3	3	3	III
	IV	3	3	3	3	2	2				3	3	3	3	2	IV
	V	3	3	3	2	2	2				3	3	3	2	2	V
	VI	3	3	2	2	2	2				3	3	2	2	2	VI
	VII	3	2	2	2	2	2				3	2	2	2	2	VII

Table 1-13 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	64.7	64.7	64.7	64.7★		69.3	69.3	69.3★		73.9	73.9★	78.5★	82.7★	85.0★			
3.0															3.0		
3.5															3.5		
4.0															4.0		
4.5															4.5		
5.0															5.0		
5.5															5.5		
6.0															6.0		
7.0															7.0		
8.0															8.0		
9.0															9.0		
10.0															10.0		
11.0															11.0		
12.0															12.0		
14.0	11.6	14.1	16.7	18.5											14.0		
16.0	10.7	13.0	15.5	17.0		10.5	12.6	14.5		9.8	11.5				16.0		
18.0	10.0	12.1	14.3	15.7		9.8	11.8	13.6		9.4	11.0	9.0			18.0		
20.0	9.3	11.3	13.1	14.5		9.3	11.1	12.7		9.0	10.5	8.9	6.8		20.0		
22.0	8.7	10.5	12.1	13.4		8.8	10.5	11.9		8.6	10.1	8.8	6.7	5.7	22.0		
24.0	8.3	9.9	11.2	12.4		8.4	10.0	11.2		8.3	9.7	8.7	6.6	5.6	24.0		
26.0	7.9	9.3	10.4	11.5		8.2	9.7	10.6		8.0	9.3	8.5	6.5	5.5	26.0		
28.0	7.4	8.6	9.6	10.7		7.9	9.2	10.0		7.8	8.9	8.3	6.4	5.4	28.0		
30.0	7.0	8.0	9.0	10.0		7.6	8.7	9.4		7.6	8.5	8.0	6.3	5.3	30.0		
32.0	6.6	7.4	8.4	9.3		7.3	8.2	8.8		7.4	8.1	7.7	6.2	5.2	32.0		
34.0	6.4	7.0	7.9	8.7		6.9	7.7	8.3		7.2	7.7	7.4	6.1	5.1	34.0		
36.0	6.1	6.5	7.4	8.1		6.4	7.2	7.8		6.8	7.3	7.0	6.0	5.0	36.0		
38.0	5.8	6.0	6.9	7.5		6.0	6.7	7.3		6.4	6.9	6.6	5.9	4.9	38.0		
40.0	5.5	5.6	6.4	6.9		5.6	6.3	6.8		6.1	6.5	6.2	5.7	4.8	40.0		
42.0	5.2	5.2	6.0	6.2		5.3	5.9	6.3		5.7	6.1	5.8	5.5	4.7	42.0		
44.0	4.9	4.8	5.6	5.7		4.9	5.5	5.8		5.4	5.7	5.5	5.2	4.6	44.0		
46.0	4.6	4.4	5.1	5.1		4.5	5.1	5.2		5.0	5.3	5.2	4.9	4.5	46.0		
48.0	4.3	4.0	4.7	4.6		4.1	4.7	4.6		4.6	5.0	4.9	4.6	4.4	48.0		
50.0	4.0	3.6	4.3	4.0		3.8	4.3	4.2		4.2	4.7	4.6	4.3	4.2	50.0		
52.0	3.7	3.3	3.8	3.5		3.5	3.9	3.7		3.9	4.1	4.2	4.0	3.9	52.0		
54.0	3.4	3.0	3.3	3.0		3.2	3.6	3.4		3.6	3.7	3.8	3.7	3.6	54.0		
56.0	3.1	2.7	2.9	2.6		2.9	3.3	3.0		3.3	3.2	3.5	3.4	3.3	56.0		
58.0						2.6	2.9	2.6		3.0	2.8	3.2	3.1	3.0	58.0		
60.0						2.3	2.5	2.0		2.7	2.4	2.8	2.8	2.7	60.0		
62.0										2.4	2.0	2.5	2.5	2.4	62.0		
64.0										2.2	1.7	2.2	2.3	2.1	64.0		
66.0												1.8	1.9	1.8	66.0		
68.0												1.6	1.7	1.6	68.0		
70.0													1.4	1.4	70.0		
Reeving	3				3				2				2				Reeving
Hook	25t														Hook		
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I	
	II	2	3	3	3		3	3	3		3	3	3	3	4	II	
	III	3	3	3	3		3	3	3		3	3	3	4	4	III	
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV	
	V	3	3	3	2		3	3	3		3	3	3	4	4	V	
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI	
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII	

Table 1-14 Main boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1★	18.7	18.7	18.7	18.7	18.7	18.7★	23.3	23.3	23.3	23.3	23.3	23.3	23.3★		
3.0	120	40.5	69	74.3	95	105	110	21.8	43.4	52.2	74.2	92	96	100	3.0	
3.5	115	38.8	64.4	69.6	93	100	105	20.7	41.8	49	69.7	86.5	94	96	3.5	
4.0	105	37.2	60.2	65.2	91	96	100	19.7	40.6	46.2	66	83	92	92	4.0	
4.5	100	35.9	56.8	61.4	86.4	93	95	18.8	39.3	43.9	62.6	79.4	88	88	4.5	
5.0	95	34.7	54	58.3	81.7	90	90	18	38.2	41.7	59.5	75.8	84	84	5.0	
5.5	90	33.6	51.3	55.4	77.9	86	86	17.3	36.5	39.8	56.8	72.2	80	80	5.5	
6.0	84	32.7	48.9	52.8	74.3	82	82	16.6	34.9	38	54.3	68.8	77	77	6.0	
7.0	66.5	30.5	44.3	47.8	67.2	72.5	68.5	15.3	31.9	34.6	49.4	62.5	69	64.3	7.0	
8.0	59.9	28.7	40.7	43.8	61.7	57.2	57.1	14.2	29.4	31.9	45.6	57.2	62	55.2	8.0	
9.0	51.5	27.2	37.6	40.5	57	50.7	49.7	13.2	27.3	29.6	42.3	52.7	53	48.6	9.0	
10.0	43.1	25.9	35	37.6	50.8	45.9	44.9	12.4	25.4	27.5	39.4	46.7	45.5	44	10.0	
11.0		24.8	32.8	35.2	41.3	40.3	39.4	11.8	24	25.9	37	40	40.8	39.4	11.0	
12.0		23.8	30.9	33.1	36.2	35.7	34.8	11.2	22.6	24.3	34.8	37.2	36.1	34.6	12.0	
14.0		21.9	27.5	29.4	28.7	28.2	27.3	10	20.1	21.6	31	29.6	28.7	27.1	14.0	
16.0								9.1	18.2	19.5	25.3	23.5	22.5	21.1	16.0	
18.0								8.4	16.8	17.8	20.6	19.8	18.8	17.4	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	1	2	2	1	1	V
	VI	1	1	2	1	1	1	1	1	1	2	2	1	1	1	VI
	VII	1	2	1	1	1	1	1	1	3	2	1	1	1	1	VII

Table 1-14 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0															3.0	
3.5	23.5	21.7	44.4	56.5	75	85	85								3.5	
4.0	22.4	20.4	42	53.6	71.4	83	83								4.0	
4.5	21.5	19.4	39.8	51	68.2	81	81	17.3	21.9	25.7	44.5	56.9	75	75	4.5	
5.0	20.7	18.4	37.8	48.7	65.3	78	78	16.3	20.8	24.3	42.2	54.2	72	72	5.0	
5.5	19.9	17.5	36	46.6	62.7	75	75	15.4	19.7	23.1	40.2	51.8	69	69	5.5	
6.0	19.2	16.7	34.4	44.7	60.3	71.2	72	14.6	18.7	21.9	38.3	49.6	66	66	6.0	
7.0	17.8	15.2	31.3	41.1	55.5	64.5	65.5	13.2	17.1	19.9	35	45.6	60.1	62	7.0	
8.0	16.5	13.9	28.8	38	51.4	58.8	55.7	12.1	15.7	18.2	32.2	42.2	55	58	8.0	
9.0	15.6	12.9	26.7	35.4	48	53.9	47.7	11.1	14.5	16.8	29.8	39.3	50.6	50.5	9.0	
10.0	14.6	11.9	24.8	33.1	45	48.9	42.2	10.3	13.5	15.6	27.8	36.8	46.9	42.2	10.0	
11.0	13.8	11.1	23.2	31.1	42.4	40.5	38.9	9.6	12.6	14.5	26	34.7	43.7	38.5	11.0	
12.0	13.2	10.5	21.9	29.5	39.2	36.3	34.6	9	11.9	13.6	24.5	32.7	38.3	34.7	12.0	
14.0	12	9.3	19.4	26.3	29	27.9	26.3	8	10.6	12.1	21.9	29.4	29.8	28.2	14.0	
16.0	11	8.3	17.4	23.7	24.1	23	21.5	7.1	9.5	10.8	19.6	26.5	24.2	22.6	16.0	
18.0	9.8	7.3	15.4	21.2	20.3	19.2	17.7	6.3	8.6	9.7	17.8	22.1	20.3	18.7	18.0	
20.0	8.9	6.5	13.9	18.5	17.3	16.2	14.7	5.6	7.8	8.8	16.3	18.4	17.3	15.7	20.0	
22.0	8.1	5.8	12.6	15.7	14.9	13.9	12.3	5	7	7.9	14.9	15.8	14.7	13.1	22.0	
24.0								4.5	6.4	7.2	13.7	13.8	12.7	11.1	24.0	
26.0								4.1	5.8	6.5	12.6	12	10.8	9.4	26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	11							9							Reeving	
Hook	90t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII

Table 1-14 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1★	41.7	41.7	41.7	41.7	41.7	41.7	41.7★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5	16.5	20.6	23.4	29.4	42.6	56	65								5.5	
6.0	15.8	19.7	22.4	28.1	40.8	54	62								6.0	
7.0	14.4	17.9	20.4	25.6	37.6	50	59	15.7	19.2	22.4	27.3	33.5	42.3	52	7.0	
8.0	13.3	16.5	18.8	23.6	34.9	46.7	56	14.5	17.6	20.6	25	30.7	39.4	50	8.0	
9.0	12.3	15.2	17.3	21.8	32.5	43.9	52	13.4	16.2	19.1	23	28.3	36.8	47.5	9.0	
10.0	11.4	14.1	16	20.2	30.5	41.3	46.3	12.5	15	17.8	21.4	26.3	34.5	45	10.0	
11.0	10.6	13.1	14.9	18.8	28.7	39	38.5	11.7	14	16.6	19.9	24.5	32.4	42.5	11.0	
12.0	9.9	12.2	13.9	17.6	27.1	37	33.9	11	13.1	15.6	18.6	22.9	30.6	40	12.0	
14.0	8.8	10.8	12.3	15.6	24.2	32.3	28.3	9.8	11.5	13.8	16.4	20.2	27.4	29.5	14.0	
16.0	7.9	9.6	11	13.9	21.8	26	24.3	8.8	10.2	12.4	14.6	18	24.9	23.4	16.0	
18.0	7.2	8.6	9.9	12.5	19.9	21.5	19.8	8	9.1	11.2	13.1	16.2	22.8	20.7	18.0	
20.0	6.6	7.8	9	11.3	18.3	18	16.5	7.3	8.2	10.2	11.9	14.7	19.4	17.5	20.0	
22.0	6	7.1	8.2	10.4	16.9	15.6	13.9	6.7	7.5	9.4	10.9	13.5	16.6	15.1	22.0	
24.0	5.4	6.5	7.5	9.5	14.8	13.4	11.8	6.1	6.8	8.5	9.9	12.3	14.5	12.9	24.0	
26.0	4.9	5.9	6.8	8.6	12.9	11.7	10.2	5.5	6.2	7.8	9	11.2	12.7	11.1	26.0	
28.0	4.5	5.3	6.2	7.9	11.3	10.2	8.7	5	5.6	7.1	8.2	10.3	11.2	9.7	28.0	
30.0	4.1	4.8	5.6	7.2	9.9	8.8	7.4	4.5	5.1	6.5	7.5	9.5	9.8	8.3	30.0	
32.0								4.1	4.6	5.9	6.9	8.7	8.6	7.1	32.0	
34.0								3.7	4.2	5.4	6.3	7.6	7.4	6	34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-14 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9	50.9 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22	26.5	31.7	32.7	42								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	30.4	39.7	14.8	17.9	20.8	25.8	27.7	31.5	35.4	9.0	
10.0	13.6	16.4	19.4	23.1	27.5	28.3	37.6	14	16.9	19.7	24.4	25.9	29.6	33.5	10.0	
11.0	12.8	15.4	18.3	21.8	25.7	26.4	35.7	13.2	15.9	18.6	23	24.2	27.9	31.7	11.0	
12.0	12.1	14.5	17.2	20.5	24.1	24.8	34	12.5	15	17.6	21.7	22.7	26.3	30	12.0	
14.0	10.8	12.8	15.3	18.2	21.4	22	30.9	11.2	13.3	15.8	19.4	20.1	23.4	26.9	14.0	
16.0	9.7	11.4	13.8	16.3	19.1	19.6	27.5	10.2	12	14.4	17.5	17.9	21	24.4	16.0	
18.0	8.8	10.3	12.4	14.7	17.2	17.6	22.8	9.4	11	13.2	15.7	16	19	21	18.0	
20.0	8	9.4	11.2	13.4	15.5	15.9	19.1	8.6	10	12.1	14.3	14.5	17.4	17.7	20.0	
22.0	7.3	8.6	10.3	12.3	14.1	14.5	16.3	7.9	9.2	11.1	13	13.1	15.9	15.1	22.0	
24.0	6.6	7.8	9.4	11.3	12.8	13.1	14	7.3	8.5	10.2	11.9	12	13.7	13	24.0	
26.0	6	7.1	8.5	10.3	11.6	11.9	12.1	6.7	7.9	9.4	10.9	11	11.9	11.3	26.0	
28.0	5.4	6.5	7.7	9.5	10.6	10.9	10.5	6.2	7.3	8.7	10.1	10.1	10.3	9.9	28.0	
30.0	4.9	5.9	7	8.7	9.7	9.6	9.1	5.7	6.7	8	9.3	9.3	9	8.6	30.0	
32.0	4.5	5.4	6.4	8	8.5	8.3	7.9	5.2	6.2	7.4	8.5	8.4	7.8	7.3	32.0	
34.0	4.1	5	5.9	7.4	7.4	7.3	6.8	4.8	5.7	6.8	7.8	7.3	6.7	6.3	34.0	
36.0	3.7	4.6	5.4	6.8	6.5	6.3	6	4.4	5.2	6.3	6.8	6.4	5.8	5.4	36.0	
38.0	3.4	4.2	5	6.3	5.7	5.5	5.2	4	4.8	5.8	5.9	5.6	5	4.6	38.0	
40.0								3.7	4.4	5.3	5.2	4.7	4.3	3.9	40.0	
42.0								3.4	4	4.9	4.5	4.2	3.7	3.3	42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-14 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★	
3.0																3.0	
3.5																3.5	
4.0																4.0	
4.5																4.5	
5.0																5.0	
5.5																5.5	
6.0																6.0	
7.0																7.0	
8.0																8.0	
9.0																9.0	
10.0	14.4	17.3	20.7	24.3	27.1	29.8										10.0	
11.0	13.7	16.4	19.7	22.9	25.6	28.3										11.0	
12.0	13	15.6	18.8	21.5	24.2	26.9				12.8	15.7	18.7	21.4	23.3		12.0	
14.0	11.7	14	17	19.1	21.6	24.3				11.7	14.3	17.2	19.3	21.2		14.0	
16.0	10.7	12.7	15.6	17.1	19.5	22.2				10.8	13.2	15.7	17.5	19.4		16.0	
18.0	9.8	11.6	14.3	15.3	17.6	20.2				9.9	12.1	14.2	15.9	17.8		18.0	
20.0	9.1	10.6	13.2	13.8	16	18				9.2	11.2	12.9	14.6	16.4		20.0	
22.0	8.4	9.8	12.2	12.5	14.7	15.3				8.6	10.4	11.7	13.4	14.9		22.0	
24.0	7.8	9.1	11.3	11.4	13.5	13.1				8.1	9.7	10.7	12.3	12.7		24.0	
26.0	7.2	8.5	10.5	10.5	11.9	11.3				7.6	9.1	9.9	11.4	11		26.0	
28.0	6.7	7.9	9.7	9.6	10.3	9.7				7.1	8.5	9.1	10.3	9.6		28.0	
30.0	6.3	7.4	8.9	8.8	8.9	8.4				6.6	8	8.4	9	8.3		30.0	
32.0	5.8	6.9	8.2	8.1	7.8	7.3				6.2	7.6	7.8	7.9	7.3		32.0	
34.0	5.4	6.4	7.5	7.4	6.8	6.2				5.9	7.2	7.2	7	6.3		34.0	
36.0	5	5.9	6.9	6.6	5.9	5.3				5.6	6.8	6.6	6.1	5.4		36.0	
38.0	4.6	5.4	6.3	5.8	5.1	4.6				5.2	6.3	6	5.3	4.7		38.0	
40.0	4.2	5	5.6	5.1	4.3	3.9				4.8	5.8	5.3	4.5	3.9		40.0	
42.0	3.9	4.6	4.8	4.4	3.7	3.2				4.5	5.3	4.6	4	3.3		42.0	
44.0	3.6	4.2	4.2	3.7	3.1	2.6				4.2	4.7	4.1	3.4	2.7		44.0	
46.0	3.3	3.9	3.6	3.3	2.5	2.1				3.9	4.1	3.6	2.8	2.2		46.0	
48.0	3	3.6	3.1	2.8	2.2	1.6				3.6	3.5	3.1	2.4	1.7		48.0	
50.0										3.3	3.1	2.6	1.9	1.3		50.0	
52.0										3	2.7	2.2	1.5			52.0	
54.0																54.0	
56.0																56.0	
58.0																58.0	
60.0																60.0	
62.0																62.0	
64.0																64.0	
66.0																66.0	
68.0																68.0	
70.0																70.0	
Reeving	4							3							Reeving		
Hook	55t							25t							Hook		
Telescoping mode	I	1	1	1	1	2	3					1	1	1	2	3	I
	II	1	1	2	3	3	3					1	2	3	3	3	II
	III	2	3	3	3	3	2					3	3	3	3	3	III
	IV	3	3	3	3	2	2					3	3	3	3	2	IV
	V	3	3	3	2	2	2					3	3	3	2	2	V
	VI	3	3	2	2	2	2					3	3	2	2	2	VI
	VII	3	2	2	2	2	2					3	2	2	2	2	VII

Table 1-14 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0	11.6	14.1	16.7	18.5											14.0	
16.0	10.7	13	15.5	17		10.5	12.6	14.5		9.8	11.5				16.0	
18.0	10	12.1	14.3	15.7		9.8	11.8	13.6		9.4	11	9			18.0	
20.0	9.3	11.3	13.1	14.5		9.3	11.1	12.7		9	10.5	8.9	6.8		20.0	
22.0	8.7	10.5	12.1	13.4		8.8	10.5	11.9		8.6	10.1	8.8	6.7	5.7	22.0	
24.0	8.3	9.9	11.2	12.4		8.4	10	11.2		8.3	9.7	8.7	6.6	5.6	24.0	
26.0	7.9	9.3	10.4	10.6		8.2	9.7	10.6		8	9.3	8.5	6.5	5.5	26.0	
28.0	7.4	8.6	9.6	9.3		7.9	9.2	9.6		7.8	8.9	8.3	6.4	5.4	28.0	
30.0	7	8	9	8.2		7.6	8.7	8.5		7.6	8.5	8	6.3	5.3	30.0	
32.0	6.6	7.4	7.9	7.2		7.3	8.2	7.6		7.4	7.6	7.7	6.2	5.2	32.0	
34.0	6.4	7	7.1	6.4		6.9	7.6	6.7		7.2	6.8	7.2	6.1	5.1	34.0	
36.0	6.1	6.5	6.3	5.6		6.4	6.7	5.9		6.8	6.2	6.5	6	5	36.0	
38.0	5.8	6	5.6	4.8		6	5.9	5.2		6.3	5.5	5.8	5.6	4.6	38.0	
40.0	5.5	5.6	4.9	4.2		5.6	5.3	4.5		5.8	4.9	5.1	5.2	4.3	40.0	
42.0	5.2	5.2	4.3	3.6		5.3	4.7	3.9		5.1	4.3	4.5	4.7	4	42.0	
44.0	4.9	4.6	3.8	3		4.9	4.1	3.4		4.7	3.7	4	4.2	3.6	44.0	
46.0	4.6	4.1	3.2	2.5		4.5	3.7	2.8		4	3.2	3.6	3.7	3.4	46.0	
48.0	4.2	3.6	2.7	2		4	3.1	2.3		3.5	2.7	3.1	3.3	3	48.0	
50.0	3.7	3	2.2	1.5		3.5	2.7	1.9		3	2.3	2.6	2.8	2.7	50.0	
52.0	3.3	2.7	1.8	1.1		3.1	2.3	1.4		2.6	1.9	2.2	2.4	2.2	52.0	
54.0	2.9	2.3	1.4			2.7	1.9	1		2.2	1.5	1.8	2	1.9	54.0	
56.0	2.5	1.9	1.1			2.3	1.5			1.8	1.1	1.4	1.6	1.6	56.0	
58.0						1.9	1.2			1.6		1.2	1.2	1.2	58.0	
60.0										1.3			1		60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3					3					2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Description of Crane

Table 1-15 Main boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3		23.3 ★
3.0	118	40.5	69	74.3	95	105	110	21.8	43.4	52.2	74.2	92	96	100	3.0	
3.5	115	38.8	64.4	69.6	93	100	105	20.7	41.8	49	69.7	86.5	94	96	3.5	
4.0	105	37.2	60.2	65.2	91	96	100	19.7	40.6	46.2	66	83	92	92	4.0	
4.5	100	35.9	56.8	61.4	86.4	93	95	18.8	39.3	43.9	62.6	79.4	88	88	4.5	
5.0	94.5	34.7	54	58.3	81.7	90	90	18	38.2	41.7	59.5	75.8	84	84	5.0	
5.5	88	33.6	51.3	55.4	77.9	86	86	17.3	36.5	39.8	56.8	72.2	80	80	5.5	
6.0	82	32.7	48.9	52.8	74.3	82	82	16.6	34.9	38	54.3	68.8	77	77	6.0	
7.0	64.9	30.5	44.3	47.8	67.2	66.5	65.7	15.3	31.9	34.6	49.4	62.5	69	61.9	7.0	
8.0	57.2	28.7	40.7	43.8	61.7	56.1	55.3	14.2	29.4	31.9	45.6	57.2	55.4	53.8	8.0	
9.0	48.7	27.2	37.6	40.5	48.7	48	47.3	13.2	27.3	29.6	42.3	49.6	48.4	46.7	9.0	
10.0	40.1	25.9	35	37.6	43.5	42.8	42.1	12.4	25.4	27.5	39.4	43.9	42.7	41	10.0	
11.0		24.8	32.8	35.2	36.9	36.2	35.4	11.8	24	25.9	37	38	36.9	35.3	11.0	
12.0		23.8	30.9	33.1	32	31.3	30.6	11.2	22.6	24.3	33.8	32.8	31.7	30.1	12.0	
14.0		21.9	26.2	25.8	24.4	23.8	23.1	10	20.1	21.6	26	25.1	24.1	22.6	14.0	
16.0								9.1	18.2	19.5	20.7	19.8	18.8	17.4	16.0	
18.0								8.4	16.8	17.8	17.3	16.4	15.5	14	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-15 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0															3.0	
3.5	23.5	21.7	44.4	56.5	75	85	85								3.5	
4.0	22.4	20.4	42	53.6	71.4	83	83								4.0	
4.5	21.5	19.4	39.8	51	68.2	81	81	17.3	21.9	25.7	44.5	56.9	75	75	4.5	
5.0	20.7	18.4	37.8	48.7	65.3	78	78	16.3	20.8	24.3	42.2	54.2	72	72	5.0	
5.5	19.9	17.5	36	46.6	62.7	75	75	15.4	19.7	23.1	40.2	51.8	69	69	5.5	
6.0	19.2	16.7	34.4	44.7	60.3	71.2	72	14.6	18.7	21.9	38.3	49.6	66	66	6.0	
7.0	17.8	15.2	31.3	41.1	55.5	64.5	62.9	13.2	17.1	19.9	35	45.6	60.1	62	7.0	
8.0	16.5	13.9	28.8	38	51.4	58.8	53.4	12.1	15.7	18.2	32.2	42.2	55	54.6	8.0	
9.0	15.6	12.9	26.7	35.4	48	50.7	45.3	11.1	14.5	16.8	29.8	39.3	50.6	46.8	9.0	
10.0	14.6	11.9	24.8	33.1	45	41.4	39.6	10.3	13.5	15.6	27.8	36.8	44.3	40.2	10.0	
11.0	13.8	11.1	23.2	31.1	39	37.6	35.8	9.6	12.6	14.5	26	34.7	37.4	35.6	11.0	
12.0	13.2	10.5	21.9	29.5	34.2	32.9	31.2	9	11.9	13.6	24.5	32.7	33.9	32.1	12.0	
14.0	12	9.3	19.4	26.3	26.9	25.7	24	8	10.6	12.1	21.9	27.9	26.9	25	14.0	
16.0	11	8.3	17.4	23.1	21.6	20.5	18.8	7.1	9.5	10.8	19.6	22.2	21	19.3	16.0	
18.0	9.8	7.3	15.4	18.5	17.4	16.3	14.8	6.3	8.6	9.7	17.8	18.4	17.1	15.5	18.0	
20.0	8.9	6.5	13.9	15.2	14.3	13.2	11.7	5.6	7.8	8.8	16.3	15.4	14.1	12.6	20.0	
22.0	8.1	5.8	12.6	13.3	12.3	11.1	9.7	5	7	7.9	14.3	13	11.8	10.3	22.0	
24.0								4.5	6.4	7.2	12.3	11.2	10.1	8.6	24.0	
26.0								4.1	5.8	6.5	10.7	9.7	8.5	7	26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	11							9							Reeving	
Hook	90t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII

Table 1-15 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1 ★	41.7	41.7	41.7	41.7	41.7	41.7	41.7 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5	16.5	20.6	23.4	29.4	42.6	56	65								5.5	
6.0	15.8	19.7	22.4	28.1	40.8	54	62								6.0	
7.0	14.4	17.9	20.4	25.6	37.6	50	59	15.7	19.2	22.4	27.3	33.5	42.3	52	7.0	
8.0	13.3	16.5	18.8	23.6	34.9	46.7	56	14.5	17.6	20.6	25	30.7	39.4	50	8.0	
9.0	12.3	15.2	17.3	21.8	32.5	43.9	48.3	13.4	16.2	19.1	23	28.3	36.8	47.5	9.0	
10.0	11.4	14.1	16	20.2	30.5	41.3	41.2	12.5	15	17.8	21.4	26.3	34.5	45	10.0	
11.0	10.6	13.1	14.9	18.8	28.7	39	36.9	11.7	14	16.6	19.9	24.5	32.4	39.6	11.0	
12.0	9.9	12.2	13.9	17.6	27.1	35.3	31.7	11	13.1	15.6	18.6	22.9	30.6	34.1	12.0	
14.0	8.8	10.8	12.3	15.6	24.2	26.8	25.1	9.8	11.5	13.8	16.4	20.2	27.4	26.5	14.0	
16.0	7.9	9.6	11	13.9	21.8	22	20.3	8.8	10.2	12.4	14.6	18	23.2	21.3	16.0	
18.0	7.2	8.6	9.9	12.5	19.5	18.2	16.5	8	9.1	11.2	13.1	16.2	19	17.3	18.0	
20.0	6.6	7.8	9	11.3	16.2	14.9	13.3	7.3	8.2	10.2	11.9	14.7	15.8	14.2	20.0	
22.0	6	7.1	8.2	10.4	13.9	12.7	11.2	6.7	7.5	9.4	10.9	13.5	13.6	12	22.0	
24.0	5.4	6.5	7.5	9.5	12.1	10.9	9.3	6.1	6.8	8.5	9.9	12.3	11.7	10.1	24.0	
26.0	4.9	5.9	6.8	8.6	10.5	9.3	7.8	5.5	6.2	7.8	9	10.5	10.1	8.5	26.0	
28.0	4.5	5.3	6.2	7.9	9.2	8	6.4	5	5.6	7.1	8.2	9.1	8.8	7.2	28.0	
30.0	4.1	4.8	5.6	7.2	8	6.8	5.2	4.5	5.1	6.5	7.5	7.9	7.6	6.1	30.0	
32.0								4.1	4.6	5.9	6.9	6.9	6.6	5.1	32.0	
34.0								3.7	4.2	5.4	6.1	6	5.7	4.2	34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-15 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9	50.9 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22	26.5	31.7	32.7	42								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	30.4	39.7	14.8	17.9	20.8	25.8	27.7	31.5	35.4	9.0	
10.0	13.6	16.4	19.4	23.1	27.5	28.3	37.6	14	16.9	19.7	24.4	25.9	29.6	33.5	10.0	
11.0	12.8	15.4	18.3	21.8	25.7	26.4	35.7	13.2	15.9	18.6	23	24.2	27.9	31.7	11.0	
12.0	12.1	14.5	17.2	20.5	24.1	24.8	34	12.5	15	17.6	21.7	22.7	26.3	30	12.0	
14.0	10.8	12.8	15.3	18.2	21.4	22	28.8	11.2	13.3	15.8	19.4	20.1	23.4	26.3	14.0	
16.0	9.7	11.4	13.8	16.3	19.1	19.6	23.1	10.2	12	14.4	17.5	17.9	21	21.2	16.0	
18.0	8.8	10.3	12.4	14.7	17.2	17.6	19	9.4	11	13.2	15.7	16	18.4	17.3	18.0	
20.0	8	9.4	11.2	13.4	15.5	15.9	15.8	8.6	10	12.1	14.3	14.5	14.9	14.6	20.0	
22.0	7.3	8.6	10.3	12.3	14.1	14	13.3	7.9	9.2	11.1	13	13.1	12.7	12.3	22.0	
24.0	6.6	7.8	9.4	11.3	12.1	11.8	11.3	7.3	8.5	10.2	11.9	11.7	10.8	10.3	24.0	
26.0	6	7.1	8.5	10.3	10.4	10.1	9.6	6.7	7.9	9.4	10.5	10.1	9.3	8.9	26.0	
28.0	5.4	6.5	7.7	9.5	9	8.7	8.3	6.2	7.3	8.7	9.2	8.6	8	7.6	28.0	
30.0	4.9	5.9	7	8.2	7.7	7.5	7	5.7	6.7	8	7.8	7.3	6.8	6.3	30.0	
32.0	4.5	5.4	6.4	7.1	6.7	6.4	5.9	5.2	6.2	7.4	6.8	6.3	5.8	5.4	32.0	
34.0	4.1	5	5.9	6.1	5.7	5.4	5	4.8	5.7	6.5	5.9	5.4	4.8	4.4	34.0	
36.0	3.7	4.6	5.4	5.3	4.9	4.6	4.2	4.4	5.2	5.7	5	4.6	4	3.6	36.0	
38.0	3.4	4.2	5	4.6	4.2	4	3.5	4	4.8	4.8	4.3	3.8	3.3	2.9	38.0	
40.0								3.7	4.4	4.2	3.7	3.3	2.7	2.3	40.0	
42.0								3.4	4	3.6	3.1	2.7	2.2	1.8	42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-15 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0																8.0
9.0																9.0
10.0	14.4	17.3	20.7	24.3	27.1	29.8										10.0
11.0	13.7	16.4	19.7	22.9	25.6	28.3										11.0
12.0	13	15.6	18.8	21.5	24.2	26.9				12.8	15.7	18.7	21.4	23.3		12.0
14.0	11.7	14	17	19.1	21.6	24.3				11.7	14.3	17.2	19.3	21.2		14.0
16.0	10.7	12.7	15.6	17.1	19.5	21.9				10.8	13.2	15.7	17.5	19.4		16.0
18.0	9.8	11.6	14.3	15.3	17.6	17.8				9.9	12.1	14.2	15.9	17.2		18.0
20.0	9.1	10.6	13.2	13.8	15.4	14.8				9.2	11.2	12.9	14.6	14.3		20.0
22.0	8.4	9.8	12.2	12.5	13	12.3				8.6	10.4	11.7	12.8	12		22.0
24.0	7.8	9.1	11.3	11.4	11	10.4				8.1	9.7	10.7	10.9	10.2		24.0
26.0	7.2	8.5	10.5	10.3	9.5	8.9				7.6	9.1	9.9	9.3	8.6		26.0
28.0	6.7	7.9	9.5	8.9	8.1	7.5				7.1	8.5	9	8	7.3		28.0
30.0	6.3	7.4	8.2	7.5	6.8	6.2				6.6	8	7.8	6.9	6.2		30.0
32.0	5.8	6.9	7.1	6.5	5.8	5.2				6.2	7.4	6.9	6	5.3		32.0
34.0	5.4	6.4	6.3	5.7	5	4.4				5.9	6.6	6	5.2	4.4		34.0
36.0	5	5.9	5.4	4.8	4.1	3.5				5.6	5.8	5.1	4.3	3.6		36.0
38.0	4.6	5.2	4.7	4.1	3.4	2.8				5.2	5	4.4	3.6	2.9		38.0
40.0	4.2	4.6	3.9	3.4	2.8	2.2				4.8	4.3	3.7	2.9	2.2		40.0
42.0	3.9	4	3.3	2.9	2.2	1.6				4.5	3.8	3.2	2.4	1.8		42.0
44.0	3.6	3.6	2.9	2.4	1.8	1.2				4	3.3	2.7	1.9	1.2		44.0
46.0	3.3	3	2.4	1.9	1.3					3.4	2.8	2.1	1.4			46.0
48.0	3	2.7	2.1	1.5						2.9	2.2	1.7	1			48.0
50.0										2.6	1.9	1.4				50.0
52.0										2.2	1.5	1				52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	4							3							Reeving	
Hook	55t							25t							Hook	
Telescoping mode	I	1	1	1	1	2	3				1	1	1	2	3	I
	II	1	1	2	3	3	3				1	2	3	3	3	II
	III	2	3	3	3	3	2				3	3	3	3	3	III
	IV	3	3	3	3	2	2				3	3	3	3	2	IV
	V	3	3	3	2	2	2				3	3	3	2	2	V
	VI	3	3	2	2	2	2				3	3	2	2	2	VI
	VII	3	2	2	2	2	2				3	2	2	2	2	VII

Table 1-15 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0	11.6	14.1	16.7	18.5											14.0	
16.0	10.7	13	15.5	17		10.5	12.6	14.5		9.8	11.5				16.0	
18.0	10	12.1	14.3	15.7		9.8	11.8	13.6		9.4	11	9			18.0	
20.0	9.3	11.3	13.1	13.8		9.3	11.1	12.7		9	10.5	8.9	6.8		20.0	
22.0	8.7	10.5	12.1	11.6		8.8	10.5	11.3		8.6	10.1	8.8	6.7	5.7	22.0	
24.0	8.3	9.9	10.6	9.8		8.4	10	9.8		8.3	9.6	8.7	6.6	5.6	24.0	
26.0	7.9	9.3	9.1	8.4		8.2	9.3	8.5		8	8.3	8.5	6.5	5.5	26.0	
28.0	7.4	8.6	8	7.2		7.9	8.3	7.4		7.8	7.3	8	6.4	5.4	28.0	
30.0	7	8	6.9	6.1		7.6	7.3	6.4		7.3	6.5	7	6.1	5	30.0	
32.0	6.6	6.9	6	5.3		7.3	6.4	5.6		6.6	5.8	6.1	5.4	4.4	32.0	
34.0	6.4	6.2	5.3	4.5		6.7	5.6	4.8		5.9	5.1	5.4	4.9	4	34.0	
36.0	6.1	5.5	4.6	3.8		5.9	4.9	4.1		5.2	4.4	4.8	4.4	3.6	36.0	
38.0	5.5	4.8	3.9	3.1		5.3	4.3	3.5		4.6	3.8	4.1	4	3.3	38.0	
40.0	4.9	4.1	3.2	2.5		4.7	3.7	2.9		4.1	3.2	3.5	3.6	2.9	40.0	
42.0	4.2	3.6	2.7	2		4.1	3.1	2.3		3.4	2.6	3	3.1	2.6	42.0	
44.0	3.7	3.1	2.2	1.5		3.5	2.6	1.8		2.9	2.1	2.6	2.7	2.3	44.0	
46.0	3.2	2.5	1.7	1		2.9	2.1	1.3		2.5	1.7	2.2	2.3	2	46.0	
48.0	2.7	2.1	1.2			2.5	1.6			2.1	1.3	1.7	1.9	1.7	48.0	
50.0	2.3	1.8	1			2	1.2			1.7		1.3	1.5	1.4	50.0	
52.0	2	1.4				1.8	1			1.3			1.1	1	52.0	
54.0						1.5									54.0	
56.0						1.1									56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3					3					2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Description of Crane

Table 1-16 Main boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3		23.3 ★
3.0	116	40.5	69	74.3	95	105	110	21.8	43.4	52.2	74.2	92	96	100	3.0	
3.5	113	38.8	64.4	69.6	93	100	105	20.7	41.8	49	69.7	86.5	94	96	3.5	
4.0	105	37.2	60.2	65.2	91	96	100	19.7	40.6	46.2	66	83	92	92	4.0	
4.5	99	35.9	56.8	61.4	86.4	93	95	18.8	39.3	43.9	62.6	79.4	88	88	4.5	
5.0	92	34.7	54	58.3	81.7	90	90	18	38.2	41.7	59.5	75.8	84	84	5.0	
5.5	85.5	33.6	51.3	55.4	77.9	85	85	17.3	36.5	39.8	56.8	72.2	80	80	5.5	
6.0	80	32.7	48.9	52.8	74.3	80.8	76.2	16.6	34.9	38	54.3	68.8	77	72.2	6.0	
7.0	62.6	30.5	44.3	47.8	67.2	60.5	59.7	15.3	31.9	34.6	49.4	62.5	61	59.2	7.0	
8.0	51.9	28.7	40.7	43.8	49.6	48.9	48.1	14.2	29.4	31.9	45.6	51.5	50.3	48.5	8.0	
9.0	43.2	27.2	37.6	40.5	41.8	41.1	40.4	13.2	27.3	29.6	42.3	44.7	43.5	41.7	9.0	
10.0	36.9	25.9	35	37.1	37.5	36.8	36	12.4	25.4	27.5	37.8	38.9	37.6	35.9	10.0	
11.0		24.8	32.2	33.2	32.5	31.9	31.1	11.8	24	25.9	34.1	33	31.8	30.1	11.0	
12.0		23.8	28.8	28.3	27.7	27	26.3	11.2	22.6	24.3	29	28	26.9	25.3	12.0	
14.0		21.9	21.9	21.3	20.8	20.2	19.5	10	20.1	21.6	22.1	21.2	20.1	18.6	14.0	
16.0								9.1	18.2	18.3	17.5	16.6	15.6	14	16.0	
18.0								8.4	15.5	14.9	14.1	13.2	12.2	10.6	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-16 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)															Working radius (m)
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0																3.0
3.5	23.5	21.7	44.4	56.5	75	85	85									3.5
4.0	22.4	20.4	42	53.6	71.4	83	83									4.0
4.5	21.5	19.4	39.8	51	68.2	81	81	17.3	21.9	25.7	44.5	56.9	75	75	4.5	
5.0	20.7	18.4	37.8	48.7	65.3	78	78	16.3	20.8	24.3	42.2	54.2	72	72	5.0	
5.5	19.9	17.5	36	46.6	62.7	75	75	15.4	19.7	23.1	40.2	51.8	69	69	5.5	
6.0	19.2	16.7	34.4	44.7	60.3	71.2	72	14.6	18.7	21.9	38.3	49.6	66	66	6.0	
7.0	17.8	15.2	31.3	41.1	55.5	64.5	58.7	13.2	17.1	19.9	35	45.6	60.1	59.7	7.0	
8.0	16.5	13.9	28.8	38	51.4	50	48	12.1	15.7	18.2	32.2	42.2	55	50	8.0	
9.0	15.6	12.9	26.7	35.4	43.6	42.2	40.3	11.1	14.5	16.8	29.8	39.3	44.3	42.2	9.0	
10.0	14.6	11.9	24.8	33.1	37.7	36.4	34.5	10.3	13.5	15.6	27.8	36.8	37.5	35.5	10.0	
11.0	13.8	11.1	23.2	31.1	33.8	32.5	30.6	9.6	12.6	14.5	26	34.3	33.1	31.1	11.0	
12.0	13.2	10.5	21.9	29.5	28.8	27.5	25.7	9	11.9	13.6	24.5	30	28.7	26.8	12.0	
14.0	12	9.3	19.4	23	21.9	20.7	19	8	10.6	12.1	21.9	23.1	21.8	20	14.0	
16.0	11	8.3	17.4	18.5	17.4	16.3	14.6	7.1	9.5	10.8	19.6	18.3	17.1	15.3	16.0	
18.0	9.8	7.3	15.4	15	13.9	12.8	11.1	6.3	8.6	9.7	15.9	14.8	13.5	11.8	18.0	
20.0	8.9	6.5	13.2	12.3	11.2	10.1	8.5	5.6	7.8	8.8	13.2	12.1	10.8	9.2	20.0	
22.0	8.1	5.8	11	10.1	9.1	8	6.5	5	7	7.9	11.2	10.1	8.9	7.3	22.0	
24.0								4.5	6.4	7.2	9.5	8.4	7.2	5.7	24.0	
26.0								4.1	5.8	6.5	8.2	7.1	6	4.4	26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	11							9							Reeving	
Hook	90t															Hook
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII

Table 1-16 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1 ★	41.7	41.7	41.7	41.7	41.7	41.7	41.7 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5	16.5	20.6	23.4	29.4	42.6	56	65								5.5	
6.0	15.8	19.7	22.4	28.1	40.8	54	62								6.0	
7.0	14.4	17.9	20.4	25.6	37.6	50	59	15.7	19.2	22.4	27.3	33.5	42.3	52	7.0	
8.0	13.3	16.5	18.8	23.6	34.9	46.7	50.7	14.5	17.6	20.6	25	30.7	39.4	50	8.0	
9.0	12.3	15.2	17.3	21.8	32.5	43.9	42.7	13.4	16.2	19.1	23	28.3	36.8	47.2	9.0	
10.0	11.4	14.1	16	20.2	30.5	39.9	36.5	12.5	15	17.8	21.4	26.3	34.5	39.1	10.0	
11.0	10.6	13.1	14.9	18.8	28.7	33.1	31.2	11.7	14	16.6	19.9	24.5	32.4	32.8	11.0	
12.0	9.9	12.2	13.9	17.6	27.1	28.6	26.7	11	13.1	15.6	18.6	22.9	30.6	27.9	12.0	
14.0	8.8	10.8	12.3	15.6	24	22.5	20.8	9.8	11.5	13.8	16.4	20.2	22	20.3	14.0	
16.0	7.9	9.6	11	13.9	19.1	17.8	16.1	8.8	10.2	12.4	14.6	18	17.4	15.8	16.0	
18.0	7.2	8.6	9.9	12.5	15.7	14.3	12.6	8	9.1	11.2	13.1	16	15.1	13.5	18.0	
20.0	6.6	7.8	9	11.3	13	11.6	10	7.3	8.2	10.2	11.9	13	12.7	11	20.0	
22.0	6	7.1	8.2	10.4	10.9	9.6	8	6.7	7.5	9.4	10.9	11	10.8	9.1	22.0	
24.0	5.4	6.5	7.5	9.5	9.2	8	6.4	6.1	6.8	8.5	9.7	9.4	9.1	7.5	24.0	
26.0	4.9	5.9	6.8	8.3	7.9	6.7	5.1	5.5	6.2	7.8	8.2	8	7.7	6.1	26.0	
28.0	4.5	5.3	6.2	7	6.7	5.5	4	5	5.6	7.1	7	6.8	6.5	4.9	28.0	
30.0	4.1	4.8	5.6	6	5.7	4.5	3.1	4.5	5.1	6.3	5.9	5.7	5.5	3.9	30.0	
32.0								4.1	4.6	5.6	5.1	4.8	4.6	3.1	32.0	
34.0								3.7	4.2	4.7	4.3	4	3.7	2.3	34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-16 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9	50.9 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22	26.5	31.7	32.7	42								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	30.4	39.7	14.8	17.9	20.8	25.8	27.7	31.5	35.4	9.0	
10.0	13.6	16.4	19.4	23.1	27.5	28.3	37.6	14	16.9	19.7	24.4	25.9	29.6	33.5	10.0	
11.0	12.8	15.4	18.3	21.8	25.7	26.4	35.7	13.2	15.9	18.6	23	24.2	27.9	31.7	11.0	
12.0	12.1	14.5	17.2	20.5	24.1	24.8	30.6	12.5	15	17.6	21.7	22.7	26.3	27.9	12.0	
14.0	10.8	12.8	15.3	18.2	21.4	22	23.2	11.2	13.3	15.8	19.4	20.1	22.9	21.4	14.0	
16.0	9.7	11.4	13.8	16.3	19.1	19.3	18.6	10.2	12	14.4	17.5	17.9	17.6	17.1	16.0	
18.0	8.8	10.3	12.4	14.7	15.8	15.6	15	9.4	11	13.2	15.7	15.4	14.2	13.7	18.0	
20.0	8	9.4	11.2	13.4	13	12.8	12.2	8.6	10	12.1	12.9	12.4	11.7	11.2	20.0	
22.0	7.3	8.6	10.3	11.6	10.8	10.6	10.1	7.9	9.2	11.1	10.8	10.3	9.7	9.2	22.0	
24.0	6.6	7.8	9.4	9.6	9	8.9	8.4	7.3	8.5	10	9.1	8.6	8	7.6	24.0	
26.0	6	7.1	8.5	8.2	7.6	7.4	6.9	6.7	7.9	8.4	7.8	7.3	6.7	6.3	26.0	
28.0	5.4	6.5	7.4	6.9	6.3	6.2	5.7	6.2	7.3	7.2	6.6	6.1	5.5	5.1	28.0	
30.0	4.9	5.9	6.3	5.9	5.4	5.2	4.7	5.7	6.7	6.2	5.6	5.1	4.6	4.1	30.0	
32.0	4.5	5.4	5.5	5	4.5	4.3	3.9	5.2	5.9	5.2	4.7	4.2	3.7	3.2	32.0	
34.0	4.1	5	4.6	4.2	3.7	3.5	3.1	4.8	4.9	4.4	3.8	3.4	2.9	2.5	34.0	
36.0	3.7	4.4	3.9	3.5	3	2.8	2.4	4.4	4.4	3.8	3.3	2.8	2.3	1.9	36.0	
38.0	3.4	3.7	3.2	2.9	2.4	2.2	1.8	4	3.6	3.2	2.5	2.2	1.6	1.3	38.0	
40.0								3.7	3	2.5	2	1.6	1.1		40.0	
42.0								3.3	2.8	2.2	1.7	1.3			42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-16 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★	
3.0																3.0	
3.5																3.5	
4.0																4.0	
4.5																4.5	
5.0																5.0	
5.5																5.5	
6.0																6.0	
7.0																7.0	
8.0																8.0	
9.0																9.0	
10.0	14.4	17.3	20.7	24.3	27.1	29.8										10.0	
11.0	13.7	16.4	19.7	22.9	25.6	28.3										11.0	
12.0	13	15.6	18.8	21.5	24.2	26.9				12.8	15.7	18.7	21.4	23.3		12.0	
14.0	11.7	14	17	19.1	21.6	22.2				11.7	14.3	17.2	19.3	21.2		14.0	
16.0	10.7	12.7	15.6	17.1	18.3	17.6				10.8	13.2	15.7	17.5	16.9		16.0	
18.0	9.8	11.6	14.3	15.3	14.7	14				9.9	12.1	14.2	14.3	13.5		18.0	
20.0	9.1	10.6	13.2	12.8	12	11.3				9.2	11.2	12.7	11.7	10.9		20.0	
22.0	8.4	9.8	11.4	10.7	9.9	9.3				8.6	10.4	10.5	9.6	8.9		22.0	
24.0	7.8	9.1	9.5	8.9	8.1	7.5				8.1	9.7	8.9	8	7.3		24.0	
26.0	7.2	8.5	8	7.5	6.7	6.1				7.6	8.3	7.5	6.7	6		26.0	
28.0	6.7	7.7	6.8	6.3	5.5	4.9				7.1	7.1	6.5	5.6	4.9		28.0	
30.0	6.3	6.5	5.7	5.2	4.4	3.9				6.6	6	5.3	4.5	3.9		30.0	
32.0	5.8	5.6	4.9	4.4	3.6	3.1				6.1	5.2	4.5	3.7	3		32.0	
34.0	5.4	4.7	4.1	3.6	2.8	2.3				5.2	4.5	3.8	3	2.4		34.0	
36.0	4.8	4	3.3	2.8	2.1	1.6				4.3	3.6	3.1	2.3	1.7		36.0	
38.0	3.7	3.2	2.6	2.2	1.5	1				3.6	2.9	2.4	1.7	1.1		38.0	
40.0	3.2	2.8	2.2	1.7	1					3.1	2.5	2	1.2			40.0	
42.0	2.9	2.4	1.8	1.3						2.8	2.1	1.6				42.0	
44.0	2.6	2.1	1.5	1						2.4	1.7	1.1				44.0	
46.0	2.2	1.7	1.1							2	1.4					46.0	
48.0	1.8	1.3								1.8	1.1					48.0	
50.0										1.4						50.0	
52.0										1.1						52.0	
54.0																54.0	
56.0																56.0	
58.0																58.0	
60.0																60.0	
62.0																62.0	
64.0																64.0	
66.0																66.0	
68.0																68.0	
70.0																70.0	
Reeving	4							3							Reeving		
Hook	55t							25t							Hook		
Telescoping mode	I	1	1	1	1	2	3					1	1	1	2	3	I
	II	1	1	2	3	3	3					1	2	3	3	3	II
	III	2	3	3	3	3	2					3	3	3	3	3	III
	IV	3	3	3	3	2	2					3	3	3	3	2	IV
	V	3	3	3	2	2	2					3	3	3	2	2	V
	VI	3	3	2	2	2	2					3	3	2	2	2	VI
	VII	3	2	2	2	2	2					3	2	2	2	2	VII

Table 1-16 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0	11.6	14.1	16.7	18.5											14.0	
16.0	10.7	13	15.5	16.3		10.5	12.6	14.5		9.8	11.5				16.0	
18.0	10	12.1	14	13.2		9.8	11.8	12.7		9.4	11	9			18.0	
20.0	9.3	11.3	11.4	10.7		9.3	11.1	10.8		9	10.1	8.9	6.8		20.0	
22.0	8.7	10.5	9.5	8.8		8.8	9.7	8.9		8.6	8.9	8.8	6.7	5.7	22.0	
24.0	8.3	8.8	7.9	7.1		8.4	8.2	7.4		8	7.9	7.6	6.5	5.6	24.0	
26.0	7.9	7.6	6.7	5.9		7.8	7	6.2		7.8	6.9	6.6	5.7	4.7	26.0	
28.0	7.3	6.6	5.7	4.9		6.8	5.9	5.1		6.6	5.7	5.7	4.9	4	28.0	
30.0	6.3	5.7	4.8	4		6.1	5.1	4.3		5.6	4.7	4.9	4.2	3.9	30.0	
32.0	5.5	4.8	3.9	3.2		5.3	4.4	3.5		4.8	3.9	4.1	3.6	3.6	32.0	
34.0	4.9	4.2	3.3	2.6		4.5	3.6	2.8		4	3.2	3.5	3.2	3.2	34.0	
36.0	4.1	3.5	2.6	1.9		3.9	3	2.2		3.4	2.6	2.9	2.8	2.8	36.0	
38.0	3.6	2.9	2.1	1.4		3.4	2.5	1.7		2.8	2	2.4	2.4	2.4	38.0	
40.0	3	2.4	1.5			2.8	1.9	1.2		2.4	1.6	1.9	2	1.9	40.0	
42.0	2.4	1.8	1			2.2	1.4			1.9	1.1	1.5	1.6	1.5	42.0	
44.0	2	1.5				1.9	1.1			1.4		1	1.2	1.1	44.0	
46.0	1.7	1.1				1.5				1.1					46.0	
48.0	1.4					1.1									48.0	
50.0	1.1														50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3					3					2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Description of Crane

Table 1-17 Main boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3		23.3 ★
3.0	114.0	40.5	69.0	74.3	95.0	105.0	110.0	21.8	43.4	52.2	74.2	92.0	96.0	100.0	3.0	
3.5	110.0	38.8	64.4	69.6	93.0	100.0	105.0	20.7	41.8	49.0	69.7	86.5	94.0	96.0	3.5	
4.0	105.0	37.2	60.2	65.2	91.0	96.0	100.0	19.7	40.6	46.2	66.0	83.0	92.0	92.0	4.0	
4.5	96.0	35.9	56.8	61.4	86.4	93.0	95.0	18.8	39.3	43.9	62.6	79.4	88.0	88.0	4.5	
5.0	89.5	34.7	54.0	58.3	81.7	89.5	89.5	18.0	38.2	41.7	59.5	75.8	84.0	84.0	5.0	
5.5	83.5	33.6	51.3	55.4	77.9	83.4	83.0	17.3	36.5	39.8	56.8	72.2	80.0	75.0	5.5	
6.0	76.0	32.7	48.9	52.8	74.3	73.0	72.0	16.6	34.9	38.0	54.3	68.8	77.0	68.5	6.0	
7.0	57.0	30.5	44.3	47.8	55.5	52.9	52.0	15.3	31.9	34.6	49.4	57.0	55.5	53.5	7.0	
8.0	45.0	28.7	40.7	43.8	43.9	42.8	42.0	14.2	29.4	31.9	45.6	44.0	42.6	40.8	8.0	
9.0	36.5	27.2	36.6	36.0	35.6	34.8	34.0	13.2	27.3	29.6	37.2	36.0	34.8	33.0	9.0	
10.0	30.0	25.9	30.3	29.8	30.6	29.8	29.0	12.4	25.4	27.5	32.0	30.9	29.6	28.0	10.0	
11.0		24.8	25.7	25.2	25.9	25.2	24.5	11.8	24.0	25.9	26.8	25.8	24.7	23.0	11.0	
12.0		22.5	22.1	21.6	21.5	20.8	20.0	11.2	22.6	23.7	22.9	21.9	20.7	19.0	12.0	
14.0		16.9	16.4	16.0	15.3	14.7	14.0	10.0	18.5	17.7	16.9	15.9	14.8	13.2	14.0	
16.0								9.1	14.4	13.6	12.8	11.9	10.9	9.4	16.0	
18.0								8.4	11.4	10.7	9.9	9.0	8.0	6.6	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	1	2	2	1	1	V
	VI	1	1	2	1	1	1	1	1	1	2	2	1	1	1	VI
	VII	1	2	1	1	1	1	1	1	3	2	1	1	1	1	VII

Table 1-17 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)															Working radius (m)
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0																3.0
3.5	23.5	21.7	44.4	56.5	75.0	85.0	85.0									3.5
4.0	22.4	20.4	42.0	53.6	71.4	83.0	83.0									4.0
4.5	21.5	19.4	39.8	51.0	68.2	81.0	81.0	17.3	21.9	25.7	44.5	56.9	75.0	75.0	4.5	
5.0	20.7	18.4	37.8	48.7	65.3	78.0	78.0	16.3	20.8	24.3	42.2	54.2	72.0	72.0	5.0	
5.5	19.9	17.5	36.0	46.6	62.7	75.0	75.0	15.4	19.7	23.1	40.2	51.8	69.0	69.0	5.5	
6.0	19.2	16.7	34.4	44.7	60.3	71.2	65.0	14.6	18.7	21.9	38.3	49.6	66.0	66.0	6.0	
7.0	17.8	15.2	31.3	41.1	55.5	51.1	49.0	13.2	17.1	19.9	35.0	45.6	60.1	52.0	7.0	
8.0	16.5	13.9	28.8	38.0	43.5	41.9	40.0	12.1	15.7	18.2	32.2	42.2	43.1	41.0	8.0	
9.0	15.6	12.9	26.7	35.4	35.8	34.3	32.5	11.1	14.5	16.8	29.8	39.3	36.0	34.0	9.0	
10.0	14.6	11.9	24.8	33.1	30.7	29.3	27.5	10.3	13.5	15.6	27.8	31.4	29.9	28.0	10.0	
11.0	13.8	11.1	23.2	28.1	26.9	25.5	23.7	9.6	12.6	14.5	26.0	27.8	26.3	24.5	11.0	
12.0	13.2	10.5	21.9	24.0	22.9	21.5	19.6	9.0	11.9	13.6	24.5	24.0	22.5	20.6	12.0	
14.0	12.0	9.3	19.4	18.1	16.9	15.5	13.8	8.0	10.6	12.1	19.1	17.9	16.4	14.6	14.0	
16.0	11.0	8.3	14.9	14.0	12.9	11.7	10.0	7.1	9.5	10.8	15.0	13.8	12.5	10.8	16.0	
18.0	9.8	7.3	11.9	11.0	10.0	8.9	7.2	6.3	8.6	9.7	12.0	10.9	9.6	8.0	18.0	
20.0	8.9	6.5	9.7	8.8	7.8	6.7	5.1	5.6	7.8	8.8	9.5	8.5	7.3	5.8	20.0	
22.0	8.1	5.8	8.0	7.1	6.1	5.1	3.5	5.0	7.0	7.9	8.0	6.9	5.8	4.2	22.0	
24.0								4.5	6.4	7.0	6.7	5.6	4.5	3.0	24.0	
26.0								4.1	5.8	5.8	5.6	4.6	3.4	1.9	26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	11							9							Reeving	
Hook	90t															Hook
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII

Table 1-17 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1 ★	41.7	41.7	41.7	41.7	41.7	41.7	41.7 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5	16.5	20.6	23.4	29.4	42.6	56.0	65.0								5.5	
6.0	15.8	19.7	22.4	28.1	40.8	54.0	62.0								6.0	
7.0	14.4	17.9	20.4	25.6	37.6	50.0	52.7	15.7	19.2	22.4	27.3	33.5	42.3	52.0	7.0	
8.0	13.3	16.5	18.8	23.6	34.9	46.7	41.0	14.5	17.6	20.6	25.0	30.7	39.4	47.2	8.0	
9.0	12.3	15.2	17.3	21.8	32.5	34.4	32.4	13.4	16.2	19.1	23.0	28.3	36.8	38.1	9.0	
10.0	11.4	14.1	16.0	20.2	30.5	27.9	26.2	12.5	15.0	17.8	21.4	26.3	33.4	31.3	10.0	
11.0	10.6	13.1	14.9	18.8	28.7	23.0	21.4	11.7	14.0	16.6	19.9	24.5	28.1	26.2	11.0	
12.0	9.9	12.2	13.9	17.6	20.6	19.4	17.8	11.0	13.1	15.6	18.6	22.9	24.0	22.1	12.0	
14.0	8.8	10.8	12.3	15.6	16.8	15.4	13.8	9.8	11.5	13.8	16.4	17.6	17.2	15.5	14.0	
16.0	7.9	9.6	11.0	13.9	14.1	12.8	11.1	8.8	10.2	12.4	14.6	13.6	13.2	11.6	16.0	
18.0	7.2	8.6	9.9	11.8	11.4	10.2	8.6	8.0	9.1	11.2	11.8	11.4	11.1	9.5	18.0	
20.0	6.6	7.8	9.0	9.8	9.5	8.2	6.6	7.3	8.2	10.2	9.7	9.4	9.1	7.5	20.0	
22.0	6.0	7.1	8.2	8.1	7.8	6.6	5.0	6.7	7.5	8.5	8.0	7.8	7.4	5.9	22.0	
24.0	5.4	6.5	7.0	6.8	6.4	5.3	3.7	6.1	6.8	7.1	6.5	6.3	6.0	4.5	24.0	
26.0	4.9	5.9	5.9	5.6	5.3	4.2	2.6	5.5	6.2	5.9	5.4	5.1	4.9	3.4	26.0	
28.0	4.5	5.3	4.9	4.7	4.3	3.2	1.7	5.0	5.3	4.9	4.4	4.2	3.9	2.5	28.0	
30.0	4.1	4.6	4.1	4.0	3.7	2.5	1.0	4.5	4.5	4.1	3.6	3.4	3.2	1.7	30.0	
32.0								4.1	3.6	3.3	2.9	2.6	2.4	1.0	32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-17 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9	50.9 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22.0	26.5	31.7	32.7	42.0								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	30.4	39.7	14.8	17.9	20.8	25.8	27.7	31.5	35.4	9.0	
10.0	13.6	16.4	19.4	23.1	27.5	28.3	33.1	14.0	16.9	19.7	24.4	25.9	29.6	30.2	10.0	
11.0	12.8	15.4	18.3	21.8	25.7	26.4	27.7	13.2	15.9	18.6	23.0	24.2	26.3	25.8	11.0	
12.0	12.1	14.5	17.2	20.5	24.1	24.8	23.6	12.5	15.0	17.6	21.7	22.7	22.6	22.2	12.0	
14.0	10.8	12.8	15.3	18.2	18.3	18.0	17.5	11.2	13.3	15.8	18.2	17.7	16.9	16.4	14.0	
16.0	9.7	11.4	13.8	14.8	14.2	13.9	13.4	10.2	12.0	14.4	14.2	13.7	13.0	12.6	16.0	
18.0	8.8	10.3	12.4	11.7	11.2	10.9	10.4	9.4	11.0	12.1	11.4	10.9	10.2	9.8	18.0	
20.0	8.0	9.4	9.8	9.4	8.9	8.6	8.2	8.6	10.0	9.9	9.2	8.7	8.1	7.7	20.0	
22.0	7.3	8.6	8.1	7.7	7.2	6.9	6.5	7.9	8.6	8.0	7.4	6.9	6.3	5.9	22.0	
24.0	6.6	7.8	6.8	6.4	5.9	5.6	5.2	7.3	7.3	6.7	6.1	5.6	5.0	4.6	24.0	
26.0	6.0	6.2	5.7	5.2	4.8	4.5	4.1	6.7	6.1	5.5	4.9	4.4	3.9	3.5	26.0	
28.0	5.4	5.3	4.7	4.3	3.8	3.6	3.2	6.2	5.1	4.6	4.0	3.5	2.9	2.6	28.0	
30.0	4.9	4.5	3.9	3.5	3.1	2.8	2.4	4.9	4.3	3.8	3.2	2.8	2.2	1.9	30.0	
32.0	4.3	3.8	3.3	2.8	2.4	2.2	1.8	4.0	3.4	2.9	2.4	2.0	1.4	1.1	32.0	
34.0	3.5	3.0	2.5	2.2	1.8	1.5	1.2								34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-17 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 12 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★	
3.0																3.0	
3.5																3.5	
4.0																4.0	
4.5																4.5	
5.0																5.0	
5.5																5.5	
6.0																6.0	
7.0																7.0	
8.0																8.0	
9.0																9.0	
10.0	14.4	17.3	20.7	24.3	27.1	29.8										10.0	
11.0	13.7	16.4	19.7	22.9	25.6	26.5										11.0	
12.0	13.0	15.6	18.8	21.5	23.6	22.8				12.8	15.7	18.7	21.4	21.6		12.0	
14.0	11.7	14.0	17.0	18.6	17.6	16.9				11.7	14.3	17.2	17.1	16.3		14.0	
16.0	10.7	12.7	14.9	14.3	13.4	12.7				10.8	13.2	14.2	13.1	12.4		16.0	
18.0	9.8	11.6	11.7	11.1	10.3	9.7				9.9	12.1	11.3	10.3	9.6		18.0	
20.0	9.1	10.6	9.4	8.9	8.0	7.5				9.2	9.7	9.0	8.2	7.5		20.0	
22.0	8.4	8.4	7.7	7.1	6.3	5.8				8.6	8.1	7.5	6.6	5.9		22.0	
24.0	7.8	7.1	6.3	5.8	5.0	4.5				7.5	6.8	6.1	5.3	4.6		24.0	
26.0	6.5	5.9	5.1	4.6	3.9	3.4				6.3	5.6	5.0	4.1	3.4		26.0	
28.0	5.5	4.9	4.2	3.7	3.0	2.4				5.3	4.6	4.0	3.2	2.5		28.0	
30.0	4.7	4.2	3.4	2.9	2.2	1.7				4.5	3.8	3.2	2.4	1.7		30.0	
32.0	3.7	3.2	2.5	2.1	1.5	1.0				3.5	2.9	2.3	1.5	1.0		32.0	
34.0																34.0	
36.0																36.0	
38.0																38.0	
40.0																40.0	
42.0																42.0	
44.0																44.0	
46.0																46.0	
48.0																48.0	
50.0																50.0	
52.0																52.0	
54.0																54.0	
56.0																56.0	
58.0																58.0	
60.0																60.0	
62.0																62.0	
64.0																64.0	
66.0																66.0	
68.0																68.0	
70.0																70.0	
Reeving	4							3							Reeving		
Hook	55t							25t							Hook		
Telescoping mode	I	1	1	1	1	2	3					1	1	1	2	3	I
	II	1	1	2	3	3	3					1	2	3	3	3	II
	III	2	3	3	3	3	2					3	3	3	3	3	III
	IV	3	3	3	3	2	2					3	3	3	3	2	IV
	V	3	3	3	2	2	2					3	3	3	2	2	V
	VI	3	3	2	2	2	2					3	3	2	2	2	VI
	VII	3	2	2	2	2	2					3	2	2	2	2	VII

Table 1-17 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0	11.6	14.1	16.7	16.4											14.0	
16.0	10.7	13.0	12.9	12.0		10.5	12.2	12.3		9.8	11.1				16.0	
18.0	10.0	11.1	10.2	9.4		9.7	10.4	9.6		9.4	8.8	8.7			18.0	
20.0	9.3	9.1	8.1	7.4		9.3	8.3	7.5		7.8	7.1	8.3	6.2		20.0	
22.0	8.1	7.4	6.5	5.8		7.5	6.7	5.9		6.6	5.8	6.7	5.6	5.1	22.0	
24.0	6.8	6.1	5.2	4.5		6.2	5.4	4.6		5.5	4.7	5.4	4.6	5.0	24.0	
26.0	5.8	5.1	4.2	3.5		5.3	4.4	3.7		4.5	3.8	4.4	3.7	4.7	26.0	
28.0	4.9	4.2	3.3	2.7		4.6	3.6	2.9		3.8	3.1	3.5	3.0	3.8	28.0	
30.0	4.1	3.4	2.5	1.9		3.9	2.9	2.2		3.1	2.4	2.9	2.5	3.0	30.0	
32.0	3.4	2.7	1.9	1.2		3.2	2.4	1.6		2.5	1.8	2.2	2.0	2.3	32.0	
34.0						2.5	1.7	1.0		2.0	1.2	1.7	1.6	1.7	34.0	
36.0												1.2	1.3	1.3	36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3					3					2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Description of Crane

Table 1-18 Main boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 0 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3		23.3 ★
3.0	110.0	40.5	69.0	74.3	95.0	105.0	110.0	21.8	43.4	52.2	74.2	92.0	96.0	100.0	3.0	
3.5	105.0	38.8	64.4	69.6	93.0	100.0	105.0	20.7	41.8	49.0	69.7	86.5	94.0	96.0	3.5	
4.0	102.0	37.2	60.2	65.2	91.0	96.0	100.0	19.7	40.6	46.2	66.0	83.0	92.0	92.0	4.0	
4.5	94.5	35.9	56.8	61.4	86.4	93.0	93.0	18.8	39.3	43.9	62.6	79.4	88.0	88.0	4.5	
5.0	86.0	34.7	54.0	58.3	81.7	86.3	85.0	18.0	38.2	41.7	59.5	75.8	84.0	75.4	5.0	
5.5	78.0	33.6	51.3	55.4	77.6	76.3	75.0	17.3	36.5	39.8	56.8	72.2	67.5	65.0	5.5	
6.0	62.5	32.7	48.9	52.8	64.3	63.1	62.0	16.6	34.9	38.0	54.3	57.1	55.3	53.0	6.0	
7.0	42.0	30.5	45.3	44.7	43.8	43.0	42.0	15.3	31.9	34.6	42.8	41.5	40.1	38.0	7.0	
8.0	31.0	28.7	34.0	33.4	32.7	31.9	31.0	14.2	29.4	31.9	32.8	31.6	30.3	28.5	8.0	
9.0	23.5	26.7	26.1	25.5	24.7	23.9	23.0	13.2	27.3	27.5	26.4	25.2	23.8	21.8	9.0	
10.0	18.0	20.8	20.3	19.7	19.0	18.3	17.5	12.4	22.5	21.7	20.8	19.6	18.3	16.5	10.0	
11.0		17.1	16.7	16.1	15.5	14.8	14.0	11.8	18.5	17.7	16.7	15.7	14.4	12.8	11.0	
12.0		13.9	13.5	13.0	12.4	11.7	11.0	11.2	15.5	14.6	13.8	12.7	11.6	10.0	12.0	
14.0		9.9	9.5	9.0	8.5	7.8	7.2	10.0	11.2	10.5	9.6	8.7	7.7	6.2	14.0	
16.0								9.1	8.2	7.6	6.8	6.0	5.0	3.6	16.0	
18.0								6.7	6.4	5.7	5.0	4.2	3.1	1.8	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-18 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 0 tons counterweight, over full range																
Working radius (m)	Boom length (m)															Working radius (m)
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0																3.0
3.5	23.5	21.7	44.4	56.5	75.0	85.0	85.0									3.5
4.0	22.4	20.4	42.0	53.6	71.4	83.0	83.0									4.0
4.5	21.5	19.4	39.8	51.0	68.2	81.0	81.0	17.3	21.9	25.7	44.5	56.9	75.0	75.0	4.5	
5.0	20.7	18.4	37.8	48.7	65.3	78.0	74.7	16.3	20.8	24.3	42.2	54.2	72.0	72.0	5.0	
5.5	19.9	17.5	36.0	46.6	62.7	75.0	63.0	15.4	19.7	23.1	40.2	51.8	69.0	65.5	5.5	
6.0	19.2	16.7	34.4	44.7	60.3	52.8	50.0	14.6	18.7	21.9	38.3	49.6	58.8	55.6	6.0	
7.0	17.8	15.2	31.3	41.1	38.6	36.8	34.5	13.2	17.1	19.9	35.0	45.6	43.5	40.8	7.0	
8.0	16.5	13.9	28.8	31.2	30.0	28.5	26.4	12.1	15.7	18.2	32.2	34.6	32.7	30.2	8.0	
9.0	15.6	12.9	26.7	26.3	24.9	23.3	21.2	11.1	14.5	16.8	29.8	27.4	25.6	23.3	9.0	
10.0	14.6	11.9	23.3	22.1	20.7	19.2	17.2	10.3	13.5	15.6	23.3	21.9	20.2	18.1	10.0	
11.0	13.8	11.1	19.1	18.0	16.8	15.3	13.5	9.6	12.6	14.5	19.2	17.7	16.2	14.3	11.0	
12.0	13.2	10.5	16.0	15.0	13.8	12.4	10.7	9.0	11.9	13.6	16.0	14.7	13.2	11.4	12.0	
14.0	12.0	9.3	11.7	10.7	9.6	8.3	6.7	8.0	10.6	12.1	11.7	10.5	9.1	7.5	14.0	
16.0	9.2	8.3	8.7	7.8	6.8	5.6	4.1	7.1	9.5	9.3	9.0	7.9	6.6	4.9	16.0	
18.0	7.4	7.3	6.8	5.9	5.0	3.8	2.3	6.3	7.4	7.2	6.9	5.8	4.6	3.1	18.0	
20.0								5.6	6.1	5.9	5.6	4.5	3.3	1.6	20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	11							9							Reeving	
Hook	90t															Hook
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII

Table 1-18 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 0 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1★	41.7	41.7	41.7	41.7	41.7	41.7	41.7★		
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5	16.5	20.6	23.4	29.4	42.6	56.0	61.3									5.5
6.0	15.8	19.7	22.4	28.1	40.8	54.0	55.0									6.0
7.0	14.4	17.9	20.4	25.6	37.6	43.7	41.0	15.7	19.2	22.4	27.3	33.5	42.3	41.0		7.0
8.0	13.3	16.5	18.8	23.6	34.9	33.2	30.7	14.5	17.6	20.6	25.0	30.7	34.5	32.0		8.0
9.0	12.3	15.2	17.3	21.8	28.1	26.2	24.0	13.4	16.2	19.1	23.0	28.3	27.8	25.5		9.0
10.0	11.4	14.1	16.0	20.2	23.1	21.4	19.2	12.5	15.0	17.8	21.4	23.4	22.9	20.7		10.0
11.0	10.6	13.1	14.9	18.8	18.9	17.3	15.3	11.7	14.0	16.6	19.9	19.6	19.2	17.0		11.0
12.0	9.9	12.2	13.9	16.2	15.8	14.3	12.4	11.0	13.1	15.6	16.6	16.2	15.8	13.8		12.0
14.0	8.8	10.8	12.3	11.8	11.5	10.0	8.3	9.8	11.5	12.0	11.4	11.1	10.8	9.1		14.0
16.0	7.9	9.6	9.2	9.0	8.6	7.4	5.7	8.8	10.2	9.0	8.5	8.2	7.9	6.3		16.0
18.0	7.2	7.7	7.2	7.0	6.7	5.4	3.8	8.0	8.0	7.5	7.0	6.7	6.4	4.8		18.0
20.0	6.6	6.4	5.8	5.7	5.3	4.1	2.5	6.9	6.3	5.9	5.4	5.1	4.9	3.3		20.0
22.0	5.3	4.9	4.5	4.3	3.9	2.7	1.3	5.5	4.9	4.5	4.0	3.8	3.5	2.0		22.0
24.0								4.4	3.8	3.4	3.0	2.7	2.5	1.1		24.0
26.0																26.0
28.0																28.0
30.0																30.0
32.0																32.0
34.0																34.0
36.0																36.0
38.0																38.0
40.0																40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-18 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 0 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3★	50.9	50.9	50.9	50.9	50.9	50.9	50.9★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22.0	26.5	31.7	32.7	34.0								8.0	
9.0	14.5	17.5	20.6	24.7	28.0	27.7	27.0	14.8	17.9	20.8	25.8	25.6	24.6	24.1	9.0	
10.0	13.6	16.4	19.4	23.1	23.0	22.6	22.0	14.0	16.9	19.7	21.8	21.2	20.3	19.8	10.0	
11.0	12.8	15.4	18.3	20.1	19.3	19.0	18.3	13.2	15.9	18.6	18.4	17.8	17.0	16.5	11.0	
12.0	12.1	14.5	17.2	16.9	16.2	15.9	15.3	12.5	15.0	16.6	15.7	15.1	14.3	13.9	12.0	
14.0	10.8	12.8	12.6	12.2	11.5	11.2	10.7	11.2	13.3	12.2	11.4	10.9	10.1	9.7	14.0	
16.0	9.7	10.2	9.5	9.1	8.5	8.2	7.7	10.2	9.9	9.3	8.5	8.1	7.4	7.0	16.0	
18.0	8.8	8.1	7.5	6.9	6.4	6.1	5.7	8.5	7.7	7.2	6.5	6.0	5.3	4.9	18.0	
20.0	6.8	6.3	5.6	5.2	4.8	4.5	4.0	6.8	6.1	5.6	4.9	4.4	3.8	3.4	20.0	
22.0	5.7	5.1	4.5	4.0	3.6	3.3	2.9	5.4	4.7	4.2	3.6	3.1	2.5	2.2	22.0	
24.0	4.3	3.8	3.3	2.9	2.4	2.2	1.8	4.3	3.6	3.1	2.5	2.1	1.5	1.2	24.0	
26.0	3.5	3.0	2.5	2.0	1.6	1.4	1.0								26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-18 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers fully extended (8.3 m), with 0 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★	
3.0																3.0	
3.5																3.5	
4.0																4.0	
4.5																4.5	
5.0																5.0	
5.5																5.5	
6.0																6.0	
7.0																7.0	
8.0																8.0	
9.0																9.0	
10.0	14.4	17.3	20.7	22.3	21.2	20.4										10.0	
11.0	13.7	16.4	19.7	18.8	17.8	17.0										11.0	
12.0	13.0	15.6	16.8	16.0	15.0	14.2				12.8	15.7	15.4	14.3	13.5		12.0	
14.0	11.7	13.2	12.3	11.6	10.6	10.0				11.7	12.2	11.5	10.4	9.6		14.0	
16.0	10.7	10.0	9.1	8.5	7.6	7.0				10.2	9.3	8.5	7.5	6.8		16.0	
18.0	8.4	7.8	6.9	6.3	5.5	4.9				7.9	7.1	6.4	5.4	4.8		18.0	
20.0	6.5	5.9	5.2	4.6	3.8	3.2				6.4	5.6	4.9	4.0	3.3		20.0	
22.0	5.2	4.6	3.9	3.3	2.5	2.0				5.0	4.2	3.5	2.8	2.1		22.0	
24.0	4.0	3.4	2.7	2.2	1.5	1.0				3.8	3.1	2.5	1.7	1.1		24.0	
26.0																26.0	
28.0																28.0	
30.0																30.0	
32.0																32.0	
34.0																34.0	
36.0																36.0	
38.0																38.0	
40.0																40.0	
42.0																42.0	
44.0																44.0	
46.0																46.0	
48.0																48.0	
50.0																50.0	
52.0																52.0	
54.0																54.0	
56.0																56.0	
58.0																58.0	
60.0																60.0	
62.0																62.0	
64.0																64.0	
66.0																66.0	
68.0																68.0	
70.0																70.0	
Reeving	4							3							Reeving		
Hook	55t							25t							Hook		
Telescoping mode	I	1	1	1	1	2	3					1	1	1	2	3	I
	II	1	1	2	3	3	3					1	2	3	3	3	II
	III	2	3	3	3	3	2					3	3	3	3	3	III
	IV	3	3	3	3	2	2					3	3	3	3	2	IV
	V	3	3	3	2	2	2					3	3	3	2	2	V
	VI	3	3	2	2	2	2					3	3	2	2	2	VI
	VII	3	2	2	2	2	2					3	2	2	2	2	VII

Table 1-18 Main boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 0 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★			
3.0															3.0		
3.5															3.5		
4.0															4.0		
4.5															4.5		
5.0															5.0		
5.5															5.5		
6.0															6.0		
7.0															7.0		
8.0															8.0		
9.0															9.0		
10.0															10.0		
11.0															11.0		
12.0															12.0		
14.0	11.6	11.3	10.2	9.4											14.0		
16.0	9.2	8.4	7.4	6.6		8.4	7.4	6.5		7.2	6.4				16.0		
18.0	7.2	6.5	5.5	4.7		6.5	5.5	4.8		5.6	4.8	6.7			18.0		
20.0	5.6	4.9	4.0	3.3		5.1	4.2	3.4		4.4	3.5	3.8	4.8		20.0		
22.0	4.5	3.8	2.9	2.2		4.0	3.1	2.3		3.3	2.6	2.9	3.5	3.5	22.0		
24.0	3.6	2.9	2.0	1.3		3.1	2.2	1.5		2.5	1.7	2.1	2.6	2.5	24.0		
26.0										1.8	1.2	1.5	1.7	1.7	26.0		
28.0													1.1	1.0	28.0		
30.0															30.0		
32.0															32.0		
34.0															34.0		
36.0															36.0		
38.0															38.0		
40.0															40.0		
42.0															42.0		
44.0															44.0		
46.0															46.0		
48.0															48.0		
50.0															50.0		
52.0															52.0		
54.0															54.0		
56.0															56.0		
58.0															58.0		
60.0															60.0		
62.0															62.0		
64.0															64.0		
66.0															66.0		
68.0															68.0		
70.0															70.0		
Reeving	3					3					2		2		2	2	Reeving
Hook	25t														Hook		
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I	
	II	2	3	3	3		3	3	3		3	3	3	3	4	II	
	III	3	3	3	3		3	3	3		3	3	3	4	4	III	
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV	
	V	3	3	3	2		3	3	3		3	3	3	4	4	V	
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI	
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII	

Description of Crane

Table 1-19 Main boom

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 64 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3	23.3 ★		
3.0	105.0	40.5	69.0	74.3	95.0	100.0	100.0	21.8	43.4	52.2	74.2	92.0	95.0	95.0	3.0	
3.5	100.0	38.8	64.4	69.6	93.0	95.0	95.0	20.7	41.8	49.0	69.7	86.5	90.0	90.0	3.5	
4.0	95.0	37.2	60.2	65.2	90.0	90.0	90.0	19.7	40.6	46.2	66.0	83.0	85.0	85.0	4.0	
4.5	90.0	35.9	56.8	61.4	85.0	85.0	85.0	18.8	39.3	43.9	62.6	79.4	80.0	80.0	4.5	
5.0	85.0	34.7	54.0	58.3	80.0	80.0	80.0	18.0	38.2	41.7	59.5	75.0	75.0	75.0	5.0	
5.5	80.0	33.6	51.3	55.4	75.0	75.0	75.0	17.3	36.5	39.8	56.8	71.0	71.0	71.0	5.5	
6.0	74.5	32.7	48.9	52.8	71.0	71.0	71.0	16.6	34.9	38.0	54.3	67.0	67.0	67.0	6.0	
7.0	65.0	30.5	44.3	47.8	64.0	64.0	63.5	15.3	31.9	34.6	49.4	61.0	61.0	61.0	7.0	
8.0	58.0	28.7	40.7	43.8	58.0	58.0	57.0	14.2	29.4	31.9	45.6	56.0	55.0	55.0	8.0	
9.0	50.5	27.2	37.6	40.5	52.0	51.3	50.0	13.2	27.3	29.6	42.3	52.5	51.5	50.0	9.0	
10.0	44.0	25.9	35.0	37.6	46.3	46.0	45.0	12.4	25.4	27.5	39.4	47.2	46.0	44.5	10.0	
11.0		24.8	32.8	35.2	41.4	40.7	40.0	11.8	24.0	25.9	37.0	42.0	40.8	39.2	11.0	
12.0		23.8	30.9	33.1	35.7	34.1	34.5	11.2	22.6	24.3	34.8	36.5	35.3	34.0	12.0	
14.0		21.9	27.5	28.0	27.8	27.2	26.6	10.0	20.1	21.6	29.5	28.63	37.5	26.2	14.0	
16.0								9.1	18.2	19.5	24.0	23.2	22.0	21.0	16.0	
18.0								8.4	16.8	17.8	19.6	19.0	18.0	16.8	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-19 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 64 tons counterweight, over full range																	
Working radius (m)	Boom length (m)															Working radius (m)	
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★			
3.0																3.0	
3.5	23.5	21.7	44.4	56.5	75.0	85.0	85.0									3.5	
4.0	22.4	20.4	42.0	53.6	71.4	80.0	80.0									4.0	
4.5	21.5	19.4	39.8	51.0	68.2	75.0	75.0	17.3	21.9	25.7	44.5	56.9	70.0	70.0	4.5		
5.0	20.7	18.4	37.8	48.7	65.3	71.0	71.0	16.3	20.8	24.3	42.2	54.2	67.0	67.0	5.0		
5.5	19.9	17.5	36.0	46.6	62.7	68.0	68.0	15.4	19.7	23.1	40.2	51.8	65.0	65.0	5.5		
6.0	19.2	16.7	34.4	44.7	60.3	65.0	65.0	14.6	18.7	21.9	38.3	49.6	63.0	63.0	6.0		
7.0	17.8	15.2	31.3	41.1	55.5	59.0	59.5	13.2	17.1	19.9	35.0	45.6	58.0	58.0	7.0		
8.0	16.5	13.9	28.8	38.0	51.4	54.0	53.5	12.1	15.7	18.2	32.2	42.2	53.5	52.5	8.0		
9.0	15.6	12.9	26.7	35.4	48.0	50.0	49.0	11.1	14.5	16.8	29.8	39.3	49.0	47.5	9.0		
10.0	14.6	11.9	24.8	33.1	45.0	45.5	44.5	10.3	13.5	15.6	27.8	36.8	45.5	43.5	10.0		
11.0	13.8	11.1	23.2	31.1	41.5	41.2	40.0	9.6	12.6	14.5	26.0	34.7	41.2	39.5	11.0		
12.0	13.2	10.5	21.9	29.5	37.5	36.8	35.5	9.0	11.9	13.6	24.5	32.7	37.3	35.6	12.0		
14.0	12.0	9.3	19.4	26.3	30.0	28.6	27.5	8.0	10.6	12.1	21.9	29.4	29.9	28.2	14.0		
16.0	11.0	8.3	17.4	23.7	24.5	23.2	21.9	7.1	9.5	10.8	19.6	25.2	24.2	22.4	16.0		
18.0	9.8	7.3	15.4	21.0	20.1	19.0	17.6	6.3	8.6	9.7	17.8	21.0	19.9	18.2	18.0		
20.0	8.9	6.5	13.9	17.7	17.0	15.8	14.5	5.6	7.8	8.8	16.3	17.7	16.7	15.1	20.0		
22.0	8.1	5.8	12.6	15.0	14.4	13.2	12.0	5.0	7.0	7.9	14.9	15.1	14.1	12.7	22.0		
24.0								4.5	6.4	7.2	13.6	13.1	12.1	10.7	24.0		
26.0								4.1	5.8	6.5	11.8	11.4	10.4	8.9	26.0		
28.0															28.0		
30.0															30.0		
32.0															32.0		
34.0															34.0		
36.0															36.0		
38.0															38.0		
40.0															40.0		
42.0															42.0		
44.0															44.0		
46.0															46.0		
48.0															48.0		
50.0															50.0		
52.0															52.0		
54.0															54.0		
56.0															56.0		
58.0															58.0		
60.0															60.0		
62.0															62.0		
64.0															64.0		
66.0															66.0		
68.0															68.0		
70.0															70.0		
Reeving	11							9							Reeving		
Hook	90t															Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I	Telescoping mode
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II	
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III	
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV	
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V	
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI	
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII	

Table 1-19 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 64 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1 ★	41.7	41.7	41.7	41.7	41.7	41.7	41.7 ★		
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5	16.5	20.6	23.4	29.4	42.6	56.0	62.0									5.5
6.0	15.8	19.7	22.4	28.1	40.8	54.0	60.0									6.0
7.0	14.4	17.9	20.4	25.6	37.6	50.0	55.0	15.7	19.2	22.4	27.3	33.5	42.3	52.0		7.0
8.0	13.3	16.5	18.8	23.6	34.9	46.7	51.0	14.5	17.6	20.6	25.0	30.7	39.4	49.0		8.0
9.0	12.3	15.2	17.3	21.8	32.5	43.9	47.0	13.4	16.2	19.1	23.0	28.3	36.8	45.0		9.0
10.0	11.4	14.1	16.0	20.2	30.5	41.3	43.0	12.5	15.0	17.8	21.4	26.3	34.5	41.5		10.0
11.0	10.6	13.1	14.9	18.8	28.7	39.0	39.0	11.7	14.0	16.6	19.9	24.5	32.4	38.0		11.0
12.0	9.9	12.2	13.9	17.6	27.1	36.5	35.5	11.0	13.1	15.6	18.6	22.9	30.6	35.0		12.0
14.0	8.8	10.8	12.3	15.6	24.2	30.5	29.0	9.8	11.5	13.8	16.4	20.2	27.6	29.5		14.0
16.0	7.9	9.6	11.0	13.9	21.8	25.0	23.5	8.8	10.2	12.4	14.6	18.0	25.1	24.1		16.0
18.0	7.2	8.6	9.9	12.5	19.9	20.9	19.2	8.0	9.1	11.2	13.1	16.2	21.5	20.0		18.0
20.0	6.6	7.8	9.0	11.3	18.0	17.5	16.1	7.3	8.2	10.2	11.9	14.7	18.3	16.9		20.0
22.0	6.0	7.1	8.2	10.4	16.1	14.9	13.5	6.7	7.5	9.4	10.9	13.5	15.6	14.2		22.0
24.0	5.4	6.5	7.5	9.5	14.0	12.9	11.4	6.1	6.8	8.5	9.9	12.3	13.5	12.2		24.0
26.0	4.9	5.9	6.8	8.6	12.3	11.2	9.7	5.5	6.2	7.8	9.0	11.2	11.8	10.7		26.0
28.0	4.5	5.3	6.2	7.9	10.8	9.8	8.3	5.0	5.6	7.1	8.2	10.3	10.4	9.1		28.0
30.0	4.1	4.8	5.6	7.2	9.7	8.5	7.1	4.5	5.1	6.5	7.5	9.4	9.2	7.9		30.0
32.0								4.1	4.6	5.9	6.9	8.5	8.0	6.8		32.0
34.0								3.7	4.2	5.4	6.3	7.5	7.1	5.9		34.0
36.0																36.0
38.0																38.0
40.0																40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-19 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 64 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9	50.9 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22.0	26.5	31.7	32.7	42.0								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	30.4	39.7	14.8	17.9	20.8	25.8	27.7	31.5	35.4	9.0	
10.0	13.6	16.4	19.4	23.1	27.5	28.3	37.6	14.0	16.9	19.7	24.4	25.9	29.6	33.5	10.0	
11.0	12.8	15.4	18.3	21.8	25.7	26.4	35.7	13.2	15.9	18.6	23.0	24.2	27.9	31.7	11.0	
12.0	12.1	14.5	17.2	20.5	24.1	24.8	34.0	12.5	15.0	17.6	21.7	22.7	26.3	30.0	12.0	
14.0	10.8	12.8	15.3	18.2	21.4	21.9	29.5	11.2	13.3	15.8	19.4	20.1	23.4	26.9	14.0	
16.0	9.7	11.4	13.8	16.3	19.1	19.5	25.2	10.2	12.0	14.4	17.5	17.9	21.0	24.0	16.0	
18.0	8.8	10.3	12.4	14.7	17.1	17.4	21.0	9.4	11.0	13.2	15.7	16.0	19.0	20.0	18.0	
20.0	8.0	9.4	11.2	13.3	15.3	15.6	17.6	8.6	10.0	12.1	14.3	14.5	17.0	16.5	20.0	
22.0	7.3	8.6	10.3	12.1	13.8	14.1	15.0	7.9	9.2	11.1	13.0	13.1	15.0	14.3	22.0	
24.0	6.6	7.8	9.4	11.0	12.5	12.7	12.9	7.3	8.5	10.2	11.9	12.0	12.8	12.4	24.0	
26.0	6.0	7.1	8.5	10.1	11.4	11.5	11.2	6.7	7.9	9.4	10.9	11.0	11.0	10.8	26.0	
28.0	5.4	6.5	7.7	9.3	10.0	10.1	9.8	6.2	7.3	8.6	10.0	10.1	9.7	9.2	28.0	
30.0	4.9	5.9	7.0	8.5	9.1	9.0	8.4	5.7	6.7	7.9	9.1	9.0	8.4	8.0	30.0	
32.0	4.5	5.4	6.4	7.8	8.2	7.9	7.3	5.2	6.2	7.3	8.2	8.0	7.4	7.0	32.0	
34.0	4.1	5.0	5.9	7.2	7.2	7.0	6.4	4.8	5.7	6.7	7.4	7.0	6.4	6.0	34.0	
36.0	3.7	4.6	5.4	6.5	6.4	6.2	5.7	4.4	5.2	6.1	6.6	6.1	5.6	5.2	36.0	
38.0	3.4	4.2	5.0	6.0	5.7	5.5	5.0	4.0	4.8	5.6	5.8	5.4	4.8	4.5	38.0	
40.0								3.7	4.4	5.1	5.1	4.7	4.2	3.8	40.0	
42.0								3.4	4.0	4.5	4.5	4.1	3.6	3.2	42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-19 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 64 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★	
3.0																3.0	
3.5																3.5	
4.0																4.0	
4.5																4.5	
5.0																5.0	
5.5																5.5	
6.0																6.0	
7.0																7.0	
8.0																8.0	
9.0																9.0	
10.0	14.4	17.3	20.7	24.3	27.0	29.7										10.0	
11.0	13.7	16.4	19.7	22.9	25.5	28.2										11.0	
12.0	13.0	15.6	18.8	21.5	24.1	26.8				12.8	15.7	18.7	21.4	23.3		12.0	
14.0	11.7	14.0	17.0	19.1	21.5	24.1				11.7	14.3	17.2	19.3	21.2		14.0	
16.0	10.7	12.7	15.6	17.1	19.3	21.9				10.8	13.2	15.7	17.5	19.4		16.0	
18.0	9.8	11.6	14.3	15.3	17.4	19.2				9.9	12.1	14.2	15.9	17.8		18.0	
20.0	9.1	10.6	13.2	13.8	15.8	16.6				9.2	11.2	12.9	14.6	16.2		20.0	
22.0	8.4	9.8	12.2	12.5	14.3	14.1				8.6	10.4	11.7	13.4	14.5		22.0	
24.0	7.8	9.1	11.3	11.4	12.5	12.1				8.1	9.7	10.7	12.3	12.5		24.0	
26.0	7.2	8.5	10.5	10.5	11.0	10.6				7.6	9.1	9.9	11.2	10.8		26.0	
28.0	6.7	7.9	9.7	9.6	9.6	9.0				7.1	8.5	9.1	9.9	9.1		28.0	
30.0	6.3	7.4	8.9	8.8	8.4	7.9				6.6	8.0	8.4	8.6	8.0		30.0	
32.0	5.8	6.9	8.2	7.9	7.4	6.8				6.2	7.6	7.8	7.6	6.9		32.0	
34.0	5.4	6.4	7.4	7.1	6.4	5.9				5.9	7.2	7.1	6.7	5.9		34.0	
36.0	5.0	5.9	6.7	6.3	5.6	5.1				5.6	6.7	6.5	5.8	5.1		36.0	
38.0	4.6	5.4	6.0	5.6	4.8	4.4				5.2	6.1	5.7	5.1	4.4		38.0	
40.0	4.2	5.0	5.4	4.9	4.2	3.7				4.8	5.5	5.2	4.5	3.8		40.0	
42.0	3.9	4.6	4.9	4.3	3.6	3.1				4.5	5.0	4.6	3.8	3.0		42.0	
44.0	3.6	4.2	4.3	3.7	3.1	2.5				4.2	4.5	4.0	3.3	2.6		44.0	
46.0	3.3	3.8	3.7	3.3	2.6	2.0				3.9	4.0	3.5	2.7	2.0		46.0	
48.0	3.0	3.4	3.3	2.8	2.1	1.6				3.6	3.5	3.0	2.2	1.6		48.0	
50.0																50.0	
52.0																52.0	
54.0																54.0	
56.0																56.0	
58.0																58.0	
60.0																60.0	
62.0																62.0	
64.0																64.0	
66.0																66.0	
68.0																68.0	
70.0																70.0	
Reeving	4							3							Reeving		
Hook	55t							25t							Hook		
Telescoping mode	I	1	1	1	1	2	3					1	1	1	2	3	I
	II	1	1	2	3	3	3					1	2	3	3	3	II
	III	2	3	3	3	3	2					3	3	3	3	3	III
	IV	3	3	3	3	2	2					3	3	3	3	2	IV
	V	3	3	3	2	2	2					3	3	3	2	2	V
	VI	3	3	2	2	2	2					3	3	2	2	2	VI
	VII	3	2	2	2	2	2					3	2	2	2	2	VII

Table 1-19 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 64 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★			
3.0															3.0		
3.5															3.5		
4.0															4.0		
4.5															4.5		
5.0															5.0		
5.5															5.5		
6.0															6.0		
7.0															7.0		
8.0															8.0		
9.0															9.0		
10.0															10.0		
11.0															11.0		
12.0															12.0		
14.0	11.6	14.1	16.7	18.5											14.0		
16.0	10.7	13.0	15.5	17.0		10.5	12.6	14.5		9.8	11.5				16.0		
18.0	10.0	12.1	14.3	15.7		9.8	11.8	13.6		9.4	11.0	9.0			18.0		
20.0	9.3	11.3	13.1	14.5		9.3	11.1	12.7		9.0	10.5	8.9	6.8		20.0		
22.0	8.7	10.5	12.1	13.4		8.8	10.5	11.9		8.6	10.1	8.8	6.7	5.7	22.0		
24.0	8.3	9.9	11.2	12.4		8.4	10.0	11.2		8.3	9.7	8.7	6.6	5.6	24.0		
26.0	7.9	9.3	10.4	11.0		8.2	9.7	10.1		8.0	9.3	8.5	6.5	5.5	26.0		
28.0	7.4	8.6	9.6	9.4		7.9	9.2	9.5		7.8	8.9	8.3	6.4	5.4	28.0		
30.0	7.0	8.0	9.0	8.1		7.6	8.7	8.5		7.6	8.2	8.0	6.3	5.3	30.0		
32.0	6.6	7.4	7.9	7.2		7.3	8.1	7.5		7.4	7.5	7.4	6.2	5.2	32.0		
34.0	6.4	7.0	6.9	6.2		6.9	7.3	6.6		6.9	6.7	6.8	6.1	5.1	34.0		
36.0	6.1	6.5	6.1	5.4		6.4	6.5	5.7		6.5	5.9	6.2	5.9	5.0	36.0		
38.0	5.8	5.9	5.4	4.7		6.0	5.8	5.0		6.2	5.4	5.6	5.5	4.9	38.0		
40.0	5.5	5.2	4.7	4.0		5.6	5.1	4.3		5.5	4.7	5.0	4.9	4.7	40.0		
42.0	5.2	4.8	4.1	3.4		5.3	4.5	3.7		4.8	4.0	4.4	4.3	4.5	42.0		
44.0	4.7	4.4	3.6	2.8		4.7	3.9	3.1		4.3	3.5	3.9	3.9	4.0	44.0		
46.0	4.3	3.9	3.0	2.3		4.3	3.4	2.6		3.8	3.0	3.4	3.5	3.5	46.0		
48.0	4.0	3.4	2.6	1.8		3.6	2.9	2.1		3.3	2.6	2.9	3.0	3.0	48.0		
50.0	3.6	3.0	2.1	1.4		3.2	2.5	1.7		2.8	2.0	2.5	2.6	2.6	50.0		
52.0						2.8	2.1	1.3		2.5	1.7	2.0	2.1	2.1	52.0		
54.0										2.1	1.3	1.7	1.7	1.7	54.0		
56.0												1.3	1.4	1.4	56.0		
58.0															58.0		
60.0															60.0		
62.0															62.0		
64.0															64.0		
66.0															66.0		
68.0															68.0		
70.0															70.0		
Reeving	3				3				2				2				Reeving
Hook	25t														Hook		
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I	
	II	2	3	3	3		3	3	3		3	3	3	3	4	II	
	III	3	3	3	3		3	3	3		3	3	3	4	4	III	
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV	
	V	3	3	3	2		3	3	3		3	3	3	4	4	V	
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI	
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII	

Description of Crane

Table 1-20 Main boom

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3		23.3 ★
3.0	105	40.5	69	74.3	95	100	100	21.8	43.4	52.2	74.2	92	95	95	3.0	
3.5	100	38.8	64.4	69.6	93	95	95	20.7	41.8	49	69.7	86.5	90	90	3.5	
4.0	95	37.2	60.2	65.2	90	90	90	19.7	40.6	46.2	66	83	85	85	4.0	
4.5	90	35.9	56.8	61.4	85	85	85	18.8	39.3	43.9	62.6	79.4	80	80	4.5	
5.0	85	34.7	54	58.3	80	79	75.5	18	38.2	41.7	59.5	75	75	64.6	5.0	
5.5	68.4	33.6	51.3	55.4	75	66.3	65.6	17.3	36.5	39.8	56.8	71	71	59.1	5.5	
6.0	63.7	32.7	48.9	52.8	71	62.6	61.9	16.6	34.9	38	54.3	67	62.3	55.4	6.0	
7.0	54.4	30.5	44.3	47.8	56	55.3	54.5	15.3	31.9	34.6	49.4	51.6	50.4	48.9	7.0	
8.0	47.1	28.7	40.7	43.8	48.5	47.8	47.1	14.2	29.4	31.9	45.6	46	44.9	43.2	8.0	
9.0	39.3	27.2	37.6	40	39.7	39	38.3	13.2	27.3	29.6	40.6	39.8	38.7	37.1	9.0	
10.0	33.3	25.9	34.3	33.9	35.1	34.4	33.7	12.4	25.4	27.5	36.3	35.3	34.2	32.6	10.0	
11.0		24.8	29.8	30.6	30.1	29.3	28.6	11.8	24	25.9	31.7	30.7	29.6	28.1	11.0	
12.0		23.8	27.1	26.7	26.1	25.5	24.8	11.2	22.6	24.3	27.5	26.5	25.5	23.9	12.0	
14.0		20.8	20.9	20.4	19.9	19.3	18.6	10	20.1	21.3	21.1	20.2	19.2	17.8	14.0	
16.0								9.1	17.9	17.3	16.8	16	15	13.7	16.0	
18.0								8.4	15	14.4	13.7	12.9	12	10.6	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	2	2	1	1	III
	IV	1	1	1	1	2	1	1	1	1	2	2	1	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-20 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0															3.0	
3.5	23.5	21.7	44.4	56.5	75	85	85								3.5	
4.0	22.4	20.4	42	53.6	71.4	80	80								4.0	
4.5	21.5	19.4	39.8	51	68.2	75	75	17.3	21.9	25.7	44.5	56.9	70	70	4.5	
5.0	20.7	18.4	37.8	48.7	65.3	71	69.3	16.3	20.8	24.3	42.2	54.2	67	67	5.0	
5.5	19.9	17.5	36	46.6	62.7	68	59	15.4	19.7	23.1	40.2	51.8	65	65	5.5	
6.0	19.2	16.7	34.4	44.7	60.3	65	52.7	14.6	18.7	21.9	38.3	49.6	63	57.2	6.0	
7.0	17.8	15.2	31.3	41.1	55.5	48.7	47.1	13.2	17.1	19.9	35	45.6	57.2	48.5	7.0	
8.0	16.5	13.9	28.8	38	48.5	42.3	40.7	12.1	15.7	18.2	32.2	42.2	46.6	42.1	8.0	
9.0	15.6	12.9	26.7	35.4	39.9	38.6	36.9	11.1	14.5	16.8	29.8	39.3	38.3	36.4	9.0	
10.0	14.6	11.9	24.8	33.1	35.3	34	32.3	10.3	13.5	15.6	27.8	36.8	34.2	32.4	10.0	
11.0	13.8	11.1	23.2	31.1	31.1	29.8	28.1	9.6	12.6	14.5	26	31.7	30.7	28.9	11.0	
12.0	13.2	10.5	21.9	28.4	27.1	25.9	24.2	9	11.9	13.6	24.5	28	26.7	25	12.0	
14.0	12	9.3	19.4	22.2	21.2	20	18.4	8	10.6	12.1	21.9	21.9	20.6	19	14.0	
16.0	11	8.3	17.4	17.9	16.9	15.7	14.2	7.1	9.5	10.8	18.8	17.7	16.5	14.9	16.0	
18.0	9.8	7.3	15.4	14.7	13.7	12.6	11.1	6.3	8.6	9.7	15.4	14.3	13.2	11.7	18.0	
20.0	8.9	6.5	13	12.1	11.1	10.2	8.6	5.6	7.8	8.8	13.1	12	11	9.4	20.0	
22.0	8.1	5.8	11	10.3	9.3	8.3	6.9	5	7	7.9	11.1	10.1	9	7.5	22.0	
24.0								4.5	6.4	7.2	9.6	8.6	7.4	6	24.0	
26.0								4.1	5.8	6.5	8.3	7.3	6.2	4.8	26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	11							9							Reeving	
Hook	90t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII

Table 1-20 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1★	41.7	41.7	41.7	41.7	41.7	41.7	41.7★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5	16.5	20.6	23.4	29.4	42.6	56	62								5.5	
6.0	15.8	19.7	22.4	28.1	40.8	54	60								6.0	
7.0	14.4	17.9	20.4	25.6	37.6	50	48	15.7	19.2	22.4	27.3	33.5	42.3	52	7.0	
8.0	13.3	16.5	18.8	23.6	34.9	46.7	42.2	14.5	17.6	20.6	25	30.7	39.4	48.1	8.0	
9.0	12.3	15.2	17.3	21.8	32.5	42.9	37.4	13.4	16.2	19.1	23	28.3	36.8	39.7	9.0	
10.0	11.4	14.1	16	20.2	30.5	36.2	34.4	12.5	15	17.8	21.4	26.3	34.5	32.8	10.0	
11.0	10.6	13.1	14.9	18.8	28.7	31.3	29.6	11.7	14	16.6	19.9	24.5	32.4	28.6	11.0	
12.0	9.9	12.2	13.9	17.6	27.1	27.7	25.9	11	13.1	15.6	18.6	22.9	28.8	26.2	12.0	
14.0	8.8	10.8	12.3	15.6	22.8	22.1	20.4	9.8	11.5	13.8	16.4	20.2	22.6	21.3	14.0	
16.0	7.9	9.6	11	13.9	19.1	17.8	16.1	8.8	10.2	12.4	14.6	18	18.5	17.1	16.0	
18.0	7.2	8.6	9.9	12.5	15.7	14.5	12.8	8	9.1	11.2	13.1	15.5	15.4	13.9	18.0	
20.0	6.6	7.8	9	11.3	13	11.9	10.3	7.3	8.2	10.2	11.9	13	12.9	11.4	20.0	
22.0	6	7.1	8.2	10.4	11.2	10	8.5	6.7	7.5	9.4	10.9	11.2	10.8	9.3	22.0	
24.0	5.4	6.5	7.5	9.5	9.5	8.3	6.9	6.1	6.8	8.5	9.9	9.5	9.1	7.6	24.0	
26.0	4.9	5.9	6.8	8.4	8.1	6.9	5.5	5.5	6.2	7.8	8.4	8.1	7.8	6.3	26.0	
28.0	4.5	5.3	6.2	7.2	6.9	5.8	4.4	5	5.6	7.1	7.1	7	6.7	5.2	28.0	
30.0	4.1	4.8	5.6	6.2	6	4.9	3.5	4.5	5.1	6.5	6.2	5.9	5.6	4.3	30.0	
32.0								4.1	4.6	5.7	5.3	5.1	4.8	3.4	32.0	
34.0								3.7	4.2	4.9	4.5	4.3	4.1	2.7	34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-20 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9	50.9 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22	26.5	31.7	32.7	42								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	30.4	39.7	14.8	17.9	20.8	25.8	27.7	31.5	35.4	9.0	
10.0	13.6	16.4	19.4	23.1	27.5	28.3	37.6	14	16.9	19.7	24.4	25.9	29.6	33.5	10.0	
11.0	12.8	15.4	18.3	21.8	25.7	26.4	32.8	13.2	15.9	18.6	23	24.2	27.9	30	11.0	
12.0	12.1	14.5	17.2	20.5	24.1	24.8	28.7	12.5	15	17.6	21.7	22.7	26.3	26.2	12.0	
14.0	10.8	12.8	15.3	18.2	21.4	21.9	21.9	11.2	13.3	15.8	19.4	20.1	21.7	20.4	14.0	
16.0	9.7	11.4	13.8	16.3	18.9	18.5	18	10.2	12	14.4	17.5	17.9	16.9	16.5	16.0	
18.0	8.8	10.3	12.4	14.7	15.6	15.2	14.7	9.4	11	13.2	15.3	14.9	13.9	13.4	18.0	
20.0	8	9.4	11.2	13.3	13	12.6	12.1	8.6	10	12.1	13	12.1	11.5	11.1	20.0	
22.0	7.3	8.6	10.3	11.3	10.8	10.5	10.1	7.9	9.2	11.1	10.6	10.2	9.5	9.2	22.0	
24.0	6.6	7.8	9.4	9.6	9.2	8.8	8.4	7.3	8.5	10.1	9.1	8.7	8.1	7.7	24.0	
26.0	6	7.1	8.5	8.2	7.7	7.4	7.1	6.7	7.9	8.7	7.8	7.4	6.8	6.4	26.0	
28.0	5.4	6.5	7.7	7.1	6.6	6.3	5.9	6.2	7.3	7.5	6.7	6.3	5.7	5.3	28.0	
30.0	4.9	5.9	6.6	6	5.6	5.4	4.9	5.7	6.7	6.3	5.8	5.4	4.8	4.4	30.0	
32.0	4.5	5.4	5.7	5.1	4.7	4.5	4.1	5.2	6.1	5.5	5	4.6	4	3.6	32.0	
34.0	4.1	5	4.9	4.4	4	3.8	3.4	4.8	5.4	4.8	4.2	3.9	3.2	2.8	34.0	
36.0	3.7	4.6	4.2	3.8	3.4	3.1	2.8	4.4	4.6	4.2	3.6	3.2	2.7	2.3	36.0	
38.0	3.4	4	3.6	3.2	2.8	2.6	2.2	4	4	3.5	3	2.6	2	1.7	38.0	
40.0								3.7	3.5	2.9	2.4	2	1.5	1.1	40.0	
42.0								3.4	3	2.4	1.9	1.5	1		42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-20 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0																8.0
9.0																9.0
10.0	14.4	17.3	20.7	24.3	27	29.7										10.0
11.0	13.7	16.4	19.7	22.9	25.5	28.2										11.0
12.0	13	15.6	18.8	21.5	24.1	26.8				12.8	15.7	18.7	21.4	23.3		12.0
14.0	11.7	14	17	19.1	21.5	21				11.7	14.3	17.2	19.3	20.3		14.0
16.0	10.7	12.7	15.6	17.1	17.4	16.8				10.8	13.2	15.7	17	16.2		16.0
18.0	9.8	11.6	14.3	15.3	14.1	13.4				9.9	12.1	14.2	14	13.3		18.0
20.0	9.1	10.6	13.2	12.7	11.7	11				9.2	11.2	12.5	11.6	10.9		20.0
22.0	8.4	9.8	11.2	10.5	9.7	9.2				8.6	10.4	10.6	9.7	9.1		22.0
24.0	7.8	9.1	9.5	9	8.1	7.6				8.1	9.7	9.1	8.3	7.6		24.0
26.0	7.2	8.5	8.1	7.5	6.8	6.3				7.6	8.5	7.8	7	6.4		26.0
28.0	6.7	7.9	7	6.5	5.8	5.2				7.1	7.4	6.7	5.9	5.3		28.0
30.0	6.3	6.9	6	5.4	4.7	4.2				6.6	6.4	5.7	4.9	4.3		30.0
32.0	5.8	6	5.2	4.6	3.9	3.4				6.2	5.6	4.9	4.1	3.4		32.0
34.0	5.4	5.1	4.5	3.9	3.3	2.7				5.6	4.7	4.1	3.4	2.7		34.0
36.0	5	4.5	3.9	3.3	2.7	2.1				5	4.1	3.5	2.8	2.1		36.0
38.0	4.5	3.9	3.3	2.7	2.1	1.5				4.4	3.4	2.9	2.2	1.5		38.0
40.0	3.8	3.3	2.7	2.2	1.5	1				3.6	3	2.4	1.7	1		40.0
42.0	3.3	2.7	2.1	1.7	1					3.1	2.5	1.9	1.2			42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	4							3							Reeving	
Hook	55t							25t							Hook	
Telescoping mode	I	1	1	1	1	2	3				1	1	1	2	3	I
	II	1	1	2	3	3	3				1	2	3	3	3	II
	III	2	3	3	3	3	2				3	3	3	3	3	III
	IV	3	3	3	3	2	2				3	3	3	3	2	IV
	V	3	3	3	2	2	2				3	3	3	2	2	V
	VI	3	3	2	2	2	2				3	3	2	2	2	VI
	VII	3	2	2	2	2	2				3	2	2	2	2	VII

Table 1-20 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 42 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0	11.6	14.1	16.7	18.5											14.0	
16.0	10.7	13	15.5	15.6		10.5	12.6	14.5		9.8	11.5				16.0	
18.0	10	12.1	13.5	12.8		9.8	11.8	12.3		9.4	11	9			18.0	
20.0	9.3	11.3	11.3	10.6		9.3	11	10.2		9	10	8.9	6.8		20.0	
22.0	8.7	10.4	9.5	9.1		8.8	9.3	8.6		8.6	8.5	8.8	6.7	5.7	22.0	
24.0	8.3	9	8.2	7.8		8.4	8	7.4		8.1	7.3	7.7	6.6	5.6	24.0	
26.0	7.9	7.9	7	6.4		8	7.1	6.5		7.1	6.2	6.8	5.7	5.5	26.0	
28.0	7.4	6.8	6.1	5.4		7.1	6.2	5.6		6.2	5.6	6.1	5.1	4.9	28.0	
30.0	6.6	5.9	5.2	4.5		6.3	5.5	4.8		5.5	4.8	5.2	4.6	4.4	30.0	
32.0	5.8	5.2	4.4	3.7		5.6	4.8	4		4.9	4	4.5	4.2	3.9	32.0	
34.0	5.2	4.6	3.7	3		4.9	4.1	3.3		4.2	3.4	3.9	3.6	3.7	34.0	
36.0	4.6	4	3.1	2.4		4.3	3.5	2.6		3.6	2.8	3.3	3.4	3.5	36.0	
38.0	4.1	3.4	2.5	1.8		3.8	2.8	2.1		3.1	2.4	2.7	3	3.4	38.0	
40.0	3.6	2.8	2	1.3		3.2	2.4	1.6		2.6	1.8	2.3	2.5	3	40.0	
42.0	3.1	2.3	1.5			2.8	1.9	1.2		2.2	1.4	1.9	2	2.7	42.0	
44.0	2.5	1.9	1.1			2.4	1.4			1.9	1.1	1.4	1.6	2.2	44.0	
46.0										1.4		1	1.2	1.7	46.0	
48.0										1.1					48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3				3				2		2	2	2	2	Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Description of Crane

Table 1-21 Main boom

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3	23.3 ★		
3.0	105	40.5	69	74.3	95	100	100	21.8	43.4	52.2	74.2	92	95	95	3.0	
3.5	100	38.8	64.4	69.6	93	95	95	20.7	41.8	49	69.7	86.5	90	90	3.5	
4.0	95	37.2	60.2	65.2	90	90	90	19.7	40.6	46.2	66	83	85	85	4.0	
4.5	89	35.9	56.8	61.4	85	85	83.3	18.8	39.3	43.9	62.6	79.4	80	69.7	4.5	
5.0	74.4	34.7	54	58.3	80	71.3	70.4	18	38.2	41.7	59.5	75	72.2	61.2	5.0	
5.5	65.1	33.6	51.3	55.4	74.1	64.3	63.5	17.3	36.5	39.8	56.8	68.8	57.2	55.6	5.5	
6.0	60.3	32.7	48.9	52.8	59.4	58.6	57.8	16.6	34.9	38	54.3	54.7	53.5	51.8	6.0	
7.0	47.1	30.5	44.3	47.8	47	46.3	45.5	15.3	31.9	34.6	49.4	49.1	47.9	46.1	7.0	
8.0	39.2	28.7	40.7	40.2	39.1	38.5	37.8	14.2	29.4	31.9	43.7	42.6	41.4	39.6	8.0	
9.0	31.6	27.2	34	33.5	32.9	32.3	31.5	13.2	27.3	29.6	33.9	33	31.8	30.2	9.0	
10.0	27.5	25.9	29.5	29.1	28.4	27.8	27.1	12.4	25.4	27.5	30	29	27.9	26.3	10.0	
11.0		24.8	26	25.6	25	24.4	23.6	11.8	24	25.4	26.4	25.4	24.3	22.7	11.0	
12.0		21.8	22.2	21.7	21.2	20.6	19.9	11.2	22.6	22.1	22.6	21.6	20.6	19	12.0	
14.0		16.9	16.9	16.5	15.9	15.3	14.6	10	17.9	17.2	17.2	16.3	15.3	13.8	14.0	
16.0								9.1	14.5	13.9	13.5	12.6	11.7	10.2	16.0	
18.0								8.4	12.1	11.4	10.6	9.8	8.8	7.5	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-21 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)															Working radius (m)
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0																3.0
3.5	23.5	21.7	44.4	56.5	75	85	85									3.5
4.0	22.4	20.4	42	53.6	71.4	80	80									4.0
4.5	21.5	19.4	39.8	51	68.2	75	71.2	17.3	21.9	25.7	44.5	56.9	70	70		4.5
5.0	20.7	18.4	37.8	48.7	65.3	71	60.3	16.3	20.8	24.3	42.2	54.2	67	63		5.0
5.5	19.9	17.5	36	46.6	62.7	65.3	56.8	15.4	19.7	23.1	40.2	51.8	65	54.3		5.5
6.0	19.2	16.7	34.4	44.7	60.3	52.8	51	14.6	18.7	21.9	38.3	49.6	60.1	52.8		6.0
7.0	17.8	15.2	31.3	41.1	45.7	44.5	42.6	13.2	17.1	19.9	35	45.6	46.3	44.3		7.0
8.0	16.5	13.9	28.8	38	35.9	34.7	33	12.1	15.7	18.2	32.2	42.2	39.7	37.8		8.0
9.0	15.6	12.9	26.7	35.4	32.4	31.1	29.4	11.1	14.5	16.8	29.8	36.2	33	31.2		9.0
10.0	14.6	11.9	24.8	30.9	29.3	28	26.2	10.3	13.5	15.6	27.8	29.3	28	26.2		10.0
11.0	13.8	11.1	23.2	26.8	25.7	24.5	22.8	9.6	12.6	14.5	26	26.4	25.1	23.3		11.0
12.0	13.2	10.5	21.9	23.2	22.2	21	19.3	9	11.9	13.6	24.1	23	21.7	20		12.0
14.0	12	9.3	19.1	18.1	17.1	16	14.3	8	10.6	12.1	18.9	17.7	16.5	14.8		14.0
16.0	11	8.3	15.2	14.3	13.3	12.2	10.7	7.1	9.5	10.8	15.3	14.2	12.9	11.4		16.0
18.0	9.8	7.3	12.5	11.6	10.7	9.6	8.1	6.3	8.6	9.7	12.5	11.5	10.3	8.8		18.0
20.0	8.9	6.5	10.4	9.5	8.6	7.5	6.1	5.6	7.8	8.8	10.4	9.4	8.2	6.7		20.0
22.0	8.1	5.8	8.7	7.9	7	5.9	4.5	5	7	7.9	8.7	7.8	6.6	5.2		22.0
24.0								4.5	6.4	7.2	7.5	6.5	5.3	3.8		24.0
26.0								4.1	5.8	6.5	6.3	5.3	4.2	2.7		26.0
28.0																28.0
30.0																30.0
32.0																32.0
34.0																34.0
36.0																36.0
38.0																38.0
40.0																40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	11							9							Reeving	
Hook	90t															Hook
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII

Table 1-21 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1★	41.7	41.7	41.7	41.7	41.7	41.7	41.7★		
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5	16.5	20.6	23.4	29.4	42.6	56	58									5.5
6.0	15.8	19.7	22.4	28.1	40.8	54	51.1									6.0
7.0	14.4	17.9	20.4	25.6	37.6	50	46.3	15.7	19.2	22.4	27.3	33.5	42.3	48.6		7.0
8.0	13.3	16.5	18.8	23.6	34.9	40.7	38.8	14.5	17.6	20.6	25	30.7	39.4	40		8.0
9.0	12.3	15.2	17.3	21.8	32.5	37	35	13.4	16.2	19.1	23	28.3	36.8	32.8		9.0
10.0	11.4	14.1	16	20.2	30.5	30.8	28.9	12.5	15	17.8	21.4	26.3	32	27		10.0
11.0	10.6	13.1	14.9	18.8	27.2	26	24.2	11.7	14	16.6	19.9	24.5	25	23.4		11.0
12.0	9.9	12.2	13.9	17.6	24	22.7	20.9	11	13.1	15.6	18.6	22.9	23	21.2		12.0
14.0	8.8	10.8	12.3	15.6	18.8	17.5	15.8	9.8	11.5	13.8	16.4	18.8	18.3	16.5		14.0
16.0	7.9	9.6	11	13.9	15	13.7	12.1	8.8	10.2	12.4	14.6	14.9	14.6	13		16.0
18.0	7.2	8.6	9.9	12.5	12.3	11	9.5	8	9.1	11.2	12.7	12.2	11.9	10.4		18.0
20.0	6.6	7.8	9	10.6	10.2	9	7.5	7.3	8.2	10.2	10.3	10.1	9.8	8.3		20.0
22.0	6	7.1	8.2	8.8	8.6	7.4	5.9	6.7	7.5	9.4	8.6	8.4	8.1	6.6		22.0
24.0	5.4	6.5	7.5	7.4	7.2	6	4.5	6.1	6.8	7.9	7.2	7	6.7	5.3		24.0
26.0	4.9	5.9	6.7	6.3	6	4.9	3.4	5.5	6.2	6.6	6.1	5.8	5.6	4.1		26.0
28.0	4.5	5.3	5.7	5.3	5	4	2.5	5	5.6	5.6	5.1	4.8	4.7	3.2		28.0
30.0	4.1	4.8	4.8	4.5	4.2	3.2	1.7	4.5	5.1	4.7	4.3	4.1	3.8	2.4		30.0
32.0								4.1	4.4	4	3.6	3.4	3.2	1.7		32.0
34.0								3.7	3.7	3.5	3.1	2.8	2.6	1.2		34.0
36.0																36.0
38.0																38.0
40.0																40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-21 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9	50.9 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22	26.5	31.7	32.7	42								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	30.4	36.7	14.8	17.9	20.8	25.8	27.7	31.5	32.9	9.0	
10.0	13.6	16.4	19.4	23.1	27.5	28.3	31.6	14	16.9	19.7	24.4	25.9	29.6	28.3	10.0	
11.0	12.8	15.4	18.3	21.8	25.7	26.4	27	13.2	15.9	18.6	23	24.2	26.4	24.6	11.0	
12.0	12.1	14.5	17.2	20.5	24.1	24.1	23.5	12.5	15	17.6	21.7	22.7	21.7	21.2	12.0	
14.0	10.8	12.8	15.3	18.2	18.5	18.3	17.7	11.2	13.3	15.8	18.7	17.4	16.7	16.3	14.0	
16.0	9.7	11.4	13.8	15.7	14.9	14.5	14.1	10.2	12	14.4	14.5	14.1	13.4	13	16.0	
18.0	8.8	10.3	12.4	12.6	12	11.7	11.3	9.4	11	12.9	11.8	11.4	10.7	10.4	18.0	
20.0	8	9.4	11.1	10.3	9.9	9.6	9.1	8.6	10	10.4	9.8	9.4	8.7	8.4	20.0	
22.0	7.3	8.6	9.3	8.6	8.1	7.9	7.4	7.9	9.2	8.7	8.1	7.7	7.1	6.7	22.0	
24.0	6.6	7.8	7.6	7.2	6.7	6.5	6	7.3	8.3	7.4	6.8	6.3	5.8	5.4	24.0	
26.0	6	7.1	6.4	6	5.6	5.3	4.9	6.7	7.2	6.3	5.7	5.3	4.7	4.3	26.0	
28.0	5.4	6.2	5.5	5.1	4.7	4.4	3.9	6.2	5.9	5.3	4.8	4.4	3.8	3.4	28.0	
30.0	4.9	5.3	4.7	4.3	3.9	3.6	3.2	5.7	5.1	4.5	4	3.6	3	2.6	30.0	
32.0	4.5	4.4	3.8	3.5	3.1	2.8	2.4	5.1	4.3	3.8	3.2	2.8	2.3	1.9	32.0	
34.0	4.1	3.8	3.3	2.9	2.5	2.3	1.8	4.4	3.7	3.2	2.7	2.2	1.7	1.3	34.0	
36.0	3.7	3.1	2.6	2.3	1.9	1.7	1.3	3.8	3	2.6	2	1.6	1.1		36.0	
38.0	3.2	2.8	2.2	1.9	1.4	1.3									38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-21 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 32 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★	
3.0																3.0	
3.5																3.5	
4.0																4.0	
4.5																4.5	
5.0																5.0	
5.5																5.5	
6.0																6.0	
7.0																7.0	
8.0																8.0	
9.0																9.0	
10.0	14.4	17.3	20.7	24.3	27	29.4										10.0	
11.0	13.7	16.4	19.7	22.9	25.5	25.5										11.0	
12.0	13	15.6	18.8	21.5	22.8	22.2				12.8	15.7	18.7	21.4	21.2		12.0	
14.0	11.7	14	17	18.5	17.4	16.7				11.7	14.3	17.2	17	16.2		14.0	
16.0	10.7	12.7	15.4	14.6	13.7	13.1				10.8	13.2	14.5	13.5	12.8		16.0	
18.0	9.8	11.6	12.4	11.7	11	10.4				9.9	12.1	11.7	10.8	10.1		18.0	
20.0	9.1	10.6	10.3	9.7	8.9	8.4				9.2	10.5	9.8	8.9	8.2		20.0	
22.0	8.4	9.4	8.6	8	7.3	6.7				8.6	8.8	8.2	7.3	6.7		22.0	
24.0	7.8	7.9	7.2	6.6	5.9	5.3				8.1	7.4	6.9	6	5.4		24.0	
26.0	7.2	6.7	6.1	5.5	4.8	4.2				7.2	6.4	5.8	5	4.3		26.0	
28.0	6.6	5.7	5.1	4.5	3.8	3.2				6.1	5.4	4.8	4	3.3		28.0	
30.0	5.7	4.9	4.2	3.7	3	2.5				5.4	4.6	4	3.2	2.5		30.0	
32.0	4.6	4	3.4	3	2.3	1.7				4.5	3.8	3.2	2.5	1.8		32.0	
34.0	4	3.5	2.8	2.4	1.7	1.1				3.9	3.2	2.7	1.9	1.2		34.0	
36.0	3.3	2.8	2.2	1.8	1.1					3.2	2.5	2	1.2			36.0	
38.0																38.0	
40.0																40.0	
42.0																42.0	
44.0																44.0	
46.0																46.0	
48.0																48.0	
50.0																50.0	
52.0																52.0	
54.0																54.0	
56.0																56.0	
58.0																58.0	
60.0																60.0	
62.0																62.0	
64.0																64.0	
66.0																66.0	
68.0																68.0	
70.0																70.0	
Reeving	4							3							Reeving		
Hook	55t							25t							Hook		
Telescoping mode	I	1	1	1	1	2	3					1	1	1	2	3	I
	II	1	1	2	3	3	3					1	2	3	3	3	II
	III	2	3	3	3	3	2					3	3	3	3	3	III
	IV	3	3	3	3	2	2					3	3	3	3	2	IV
	V	3	3	3	2	2	2					3	3	3	2	2	V
	VI	3	3	2	2	2	2					3	3	2	2	2	VI
	VII	3	2	2	2	2	2					3	2	2	2	2	VII

Table 1-21 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 32 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0	11.6	14.1	16.5	15.6											14.0	
16.0	10.7	13	13.1	12.3		10.5	12.6	11.8		9.8	11.3				16.0	
18.0	10	11.6	10.6	9.9		9.8	10.3	9.6		9.4	9.3	9			18.0	
20.0	9.3	9.5	8.7	8		9.3	8.5	7.7		8.5	7.7	7.8	6.6		20.0	
22.0	8.7	8.2	7.4	6.7		8.1	7.2	6.5		7.2	6.5	6.7	5.7	4.9	22.0	
24.0	7.5	7.2	6.3	5.5		7	6.1	5.3		6.1	5.4	5.8	4.9	4.1	24.0	
26.0	6.7	6.1	5.2	4.4		6.2	5.4	4.6		5.3	4.5	4.9	4.2	3.5	26.0	
28.0	5.8	5.1	4.3	3.5		5.4	4.5	3.7		4.5	3.9	4.2	3.7	3	28.0	
30.0	4.9	4.2	3.4	2.7		4.7	3.8	3		3.8	3.1	3.5	3.1	2.5	30.0	
32.0	4.2	3.6	2.7	2		4	3.1	2.3		3.3	2.5	2.9	2.6	2.1	32.0	
34.0	3.4	2.8	2	1.3		3.3	2.4	1.6		2.7	1.9	2.4	2.3	1.9	34.0	
36.0	3	2.3	1.5			2.7	1.9	1.2		2.2	1.4	1.9	2	1.6	36.0	
38.0						2.2	1.4			1.8	1	1.4	1.6	1.3	38.0	
40.0												1	1.1	1	40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3					3					2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Description of Crane

Table 1-22 Main boom

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3		23.3 ★
3.0	105	40.5	69	74.3	95	100	100	21.8	43.4	52.2	74.2	92	95	95	3.0	
3.5	100	38.8	64.4	69.6	93	95	95	20.7	41.8	49	69.7	86.5	90	90	3.5	
4.0	93	37.2	60.2	65.2	90	90	90	19.7	40.6	46.2	66	83	85	78.3	4.0	
4.5	80.3	35.9	56.8	61.4	85	77.5	76.5	18.8	39.3	43.9	62.6	79.4	68.8	66.9	4.5	
5.0	69.9	34.7	54	58.3	66.4	65.5	64.5	18	38.2	41.7	59.5	60	58.8	56.9	5.0	
5.5	59.5	33.6	51.3	55.4	58.4	57.5	56.6	17.3	36.5	39.8	56.8	53.4	52.2	50.4	5.5	
6.0	51.9	32.7	48.9	52.8	52	51.2	50.3	16.6	34.9	38	54.3	49.1	47.7	45.9	6.0	
7.0	39.7	30.5	41.4	40.8	40.1	39.4	38.6	15.3	31.9	34.6	40.5	39.4	38.2	36.4	7.0	
8.0	31.3	28.7	33.5	32.9	32.3	31.6	30.8	14.2	29.4	31.9	33.5	32.5	31.3	29.6	8.0	
9.0	25.3	27.2	28	27.5	26.9	26.2	25.4	13.2	27.3	29.3	28.4	27.4	26.2	24.5	9.0	
10.0	20.7	23.7	23.3	22.9	22.2	21.6	20.9	12.4	25.4	24.6	23.8	22.8	21.6	20	10.0	
11.0		20.8	20.3	19.8	19.2	18.6	17.9	11.8	22	21.2	20.4	19.5	18.4	16.8	11.0	
12.0		17.6	17.1	16.7	16.1	15.5	14.9	11.2	19	18.2	17.5	16.5	15.5	13.9	12.0	
14.0		13.1	12.7	12.2	11.8	11.2	10.5	10	14.5	13.8	13.1	12.2	11.2	9.7	14.0	
16.0								9.1	11.3	10.6	9.9	9.1	8.1	6.7	16.0	
18.0								8.4	8.9	8.4	7.7	6.8	5.9	4.5	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	2	2	1	1	III
	IV	1	1	1	1	2	1	1	1	1	2	2	1	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-22 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	27.9	27.9	27.9	27.9	27.9	27.9	27.9 ★	32.5	32.5	32.5	32.5	32.5	32.5	32.5 ★		
3.0															3.0	
3.5	23.5	21.7	44.4	56.5	75	85	85								3.5	
4.0	22.4	20.4	42	53.6	71.4	80	74.2								4.0	
4.5	21.5	19.4	39.8	51	68.2	75	66.9	17.3	21.9	25.7	44.5	56.9	70	63.7	4.5	
5.0	20.7	18.4	37.8	48.7	65.3	60.9	58.8	16.3	20.8	24.3	42.2	54.2	63	60.7	5.0	
5.5	19.9	17.5	36	46.6	59.9	54.9	52.8	15.4	19.7	23.1	40.2	51.8	55.2	53	5.5	
6.0	19.2	16.7	34.4	44.7	51.9	50.3	48.2	14.6	18.7	21.9	38.3	49.6	48.8	46.7	6.0	
7.0	17.8	15.2	31.3	41.1	42.8	41.2	39.1	13.2	17.1	19.9	35	43.7	38.6	36.6	7.0	
8.0	16.5	13.9	28.8	36	34.7	33.3	31.3	12.1	15.7	18.2	32.2	32.5	31.1	29.2	8.0	
9.0	15.6	12.9	26.7	29.3	28.1	26.8	24.9	11.1	14.5	16.8	29.8	26.4	25.1	23.4	9.0	
10.0	14.6	11.9	24.8	24.3	23.2	22	20.2	10.3	13.5	15.6	24.5	23.3	21.9	20.2	10.0	
11.0	13.8	11.1	22	21.3	20.3	19	17.3	9.6	12.6	14.5	22.2	20.9	19.6	17.8	11.0	
12.0	13.2	10.5	19.2	18.2	17.1	16	14.3	9	11.9	13.6	19.3	18.1	16.9	15.2	12.0	
14.0	12	9.3	14.8	13.9	12.8	11.8	10.1	8	10.6	12.1	14.9	13.8	12.6	10.9	14.0	
16.0	11	8.3	11.7	10.8	9.8	8.7	7.2	7.1	9.5	10.8	11.7	10.6	9.4	7.8	16.0	
18.0	9.8	7.3	9.5	8.6	7.6	6.6	5.1	6.3	8.6	9.7	9.5	8.4	7.3	5.7	18.0	
20.0	8.2	6.5	7.8	7	6	5	3.4	5.6	7.8	8.3	7.7	6.7	5.6	4.1	20.0	
22.0	6.6	5.8	6.3	5.5	4.5	3.5	2.1	5	7	6.5	6.3	5.3	4.2	2.7	22.0	
24.0								4.5	5.6	5.4	5.1	4.2	3	1.6	24.0	
26.0								4.1	4.6	4.3	4.1	3.2	2.1		26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	11							9							Reeving	
Hook	90t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	I	
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	1	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	1	1	1	VII

Table 1-22 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1 ★	41.7	41.7	41.7	41.7	41.7	41.7	41.7 ★		
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5	16.5	20.6	23.4	29.4	42.6	56	54.9									5.5
6.0	15.8	19.7	22.4	28.1	40.8	53.2	50.5									6.0
7.0	14.4	17.9	20.4	25.6	37.6	41.3	39.3	15.7	19.2	22.4	27.3	33.5	42.3	41.9		7.0
8.0	13.3	16.5	18.8	23.6	34.9	33.6	31.6	14.5	17.6	20.6	25	30.7	36	33.9		8.0
9.0	12.3	15.2	17.3	21.8	29.2	27.7	25.8	13.4	16.2	19.1	23	28.3	30.2	28.2		9.0
10.0	11.4	14.1	16	20.2	24.4	23	21.2	12.5	15	17.8	21.4	26	25.3	23.4		10.0
11.0	10.6	13.1	14.9	18.8	21.1	19.8	18	11.7	14	16.6	19.9	21.8	21.5	19.6		11.0
12.0	9.9	12.2	13.9	17.6	19.1	17.7	16	11	13.1	15.6	18.6	18.8	18.5	16.8		12.0
14.0	8.8	10.8	12.3	14.9	14.6	13.3	11.6	9.8	11.5	13.8	14.7	14.4	14.1	12.4		14.0
16.0	7.9	9.6	11	11.9	11.5	10.4	8.7	8.8	10.2	12.4	11.6	11.3	10.9	9.4		16.0
18.0	7.2	8.6	9.9	9.6	9.2	8	6.4	8	9.1	9.8	9.3	9.1	8.7	7.2		18.0
20.0	6.6	7.8	8.1	7.8	7.5	6.3	4.8	7.3	8.2	8	7.6	7.3	7	5.5		20.0
22.0	6	7.1	6.7	6.5	6.1	5	3.5	6.7	7.3	6.6	6.1	5.9	5.6	4.1		22.0
24.0	5.4	6.1	5.6	5.3	5	3.8	2.4	6.1	5.9	5.5	5.1	4.8	4.5	3.1		24.0
26.0	4.9	5	4.6	4.4	4.1	2.9	1.5	5.5	5	4.5	4.2	3.9	3.6	2.2		26.0
28.0	4.5	3.9	3.5	3.3	3.1	2.1		4.7	4	3.6	3.2	3	2.7	1.4		28.0
30.0								3.8	3.3	2.9	2.5	2.3	2.1			30.0
32.0																32.0
34.0																34.0
36.0																36.0
38.0																38.0
40.0																40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-22 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9	50.9 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	15.5	18.8	22	26.5	31.7	32.7	34.8								8.0	
9.0	14.5	17.5	20.6	24.7	29.5	29.9	29.1	14.8	17.9	20.8	25.8	27.7	28.2	27.7	9.0	
10.0	13.6	16.4	19.4	23.1	25.6	25.2	24.7	14	16.9	19.7	24.4	24.8	23.9	23.5	10.0	
11.0	12.8	15.4	18.3	21.8	21.7	21.3	20.8	13.2	15.9	18.6	22	21.2	20.4	20	11.0	
12.0	12.1	14.5	17.2	19.8	18.7	18.4	17.9	12.5	15	17.6	18.7	18.1	17.4	17	12.0	
14.0	10.8	12.8	15.3	14.7	14.2	13.9	13.3	11.2	13.3	15.2	14.2	13.7	13	12.6	14.0	
16.0	9.7	11.4	11.9	11.5	11	10.8	10.2	10.2	12	11.8	11.1	10.7	10	9.6	16.0	
18.0	8.8	10.3	9.7	9.3	8.7	8.5	8.1	9.4	10.3	9.5	8.9	8.4	7.8	7.4	18.0	
20.0	8	9	7.9	7.5	7	6.8	6.3	8.6	8.2	7.7	7.2	6.7	6.1	5.7	20.0	
22.0	7.3	7.1	6.4	6.1	5.6	5.4	4.9	7.9	6.8	6.3	5.6	5.3	4.7	4.3	22.0	
24.0	6.6	5.9	5.3	4.9	4.4	4.3	3.8	6.2	5.6	5	4.5	4.1	3.5	3.1	24.0	
26.0	5.7	4.9	4.3	4	3.5	3.3	2.9	5.2	4.6	4.1	3.5	3.2	2.6	2.2	26.0	
28.0	4.6	4.1	3.6	3.2	2.7	2.5	2.1	4.4	3.8	3.3	2.8	2.4	1.9	1.5	28.0	
30.0	3.9	3.5	2.9	2.6	2.1	1.9	1.5	3.7	3.1	2.6	2.1	1.8	1.2		30.0	
32.0	3.1	2.7	2.2	1.8	1.5	1.2									32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-22 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 22 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★	
3.0																3.0	
3.5																3.5	
4.0																4.0	
4.5																4.5	
5.0																5.0	
5.5																5.5	
6.0																6.0	
7.0																7.0	
8.0																8.0	
9.0																9.0	
10.0	14.4	17.3	20.7	24.3	23.7	23										10.0	
11.0	13.7	16.4	19.7	21.6	20.5	19.8										11.0	
12.0	13	15.6	18.8	18.5	17.6	17				12.8	15.7	18.2	17.2	16.4		12.0	
14.0	11.7	14	14.7	14.1	13.2	12.5				11.7	14.3	13.9	13	12.3		14.0	
16.0	10.7	12.5	11.5	11	10.2	9.5				10.8	11.8	11	10.1	9.3		16.0	
18.0	9.8	10	9.3	8.7	8	7.3				9.9	9.4	8.8	7.9	7.2		18.0	
20.0	9	8.1	7.4	6.9	6.1	5.5				8.5	7.7	7.1	6.3	5.5		20.0	
22.0	7.4	6.7	6	5.5	4.7	4.2				7.1	6.4	5.8	4.9	4.3		22.0	
24.0	6.2	5.5	4.9	4.4	3.6	3.1				6	5.3	4.6	3.9	3.1		24.0	
26.0	5.2	4.6	3.9	3.4	2.6	2.2				5.1	4.3	3.7	3	2.2		26.0	
28.0	4.4	3.8	3.1	2.7	1.9	1.4				4.3	3.5	3	2.2	1.5		28.0	
30.0	3.4	2.9	2.3	1.8	1.2					3.6	2.9	2.3	1.4			30.0	
32.0																32.0	
34.0																34.0	
36.0																36.0	
38.0																38.0	
40.0																40.0	
42.0																42.0	
44.0																44.0	
46.0																46.0	
48.0																48.0	
50.0																50.0	
52.0																52.0	
54.0																54.0	
56.0																56.0	
58.0																58.0	
60.0																60.0	
62.0																62.0	
64.0																64.0	
66.0																66.0	
68.0																68.0	
70.0																70.0	
Reeving	4							3							Reeving		
Hook	55t							25t							Hook		
Telescoping mode	I	1	1	1	1	2	3					1	1	1	2	3	I
	II	1	1	2	3	3	3					1	2	3	3	3	II
	III	2	3	3	3	3	2					3	3	3	3	3	III
	IV	3	3	3	3	2	2					3	3	3	3	2	IV
	V	3	3	3	2	2	2					3	3	3	2	2	V
	VI	3	3	2	2	2	2					3	3	2	2	2	VI
	VII	3	2	2	2	2	2					3	2	2	2	2	VII

Table 1-22 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 22 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0	11.6	13.6	12.6	11.8											14.0	
16.0	10.7	10.7	9.8	9.1		10.5	9.6	8.8		9.2	8.5				16.0	
18.0	9.4	8.7	7.7	7		8.5	7.6	6.9		7.5	6.8	6.7			18.0	
20.0	7.7	7.1	6.1	5.5		7	6.1	5.5		6.2	5.4	5.5	4.8		20.0	
22.0	6.4	5.8	4.9	4.3		5.8	4.9	4.3		5.1	4.4	4.6	4	4.5	22.0	
24.0	5.3	4.7	3.9	3.4		4.9	4	3.3		4.2	3.5	3.8	3.3	3.7	24.0	
26.0	4.6	3.9	3.1	2.5		4.1	3.3	2.6		3.5	2.7	3.1	2.7	3	26.0	
28.0	3.8	3.1	2.4	1.7		3.5	2.6	1.9		2.8	2.1	2.5	2.2	2.4	28.0	
30.0	3.1	2.5	1.8	1		2.9	2	1.3		2.3	1.5	1.9	1.7	1.9	30.0	
32.0						2.4	1.5			1.7	1	1.4	1.3	1.2	32.0	
34.0													1.1		34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3				3				2		2	2	2	2	Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Table 1-23 Main boom

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	14.1 ★	18.7	18.7	18.7	18.7	18.7	18.7 ★	23.3	23.3	23.3	23.3	23.3	23.3	23.3 ★		
3.0	105.0	40.5	69.0	74.3	95.0	100.0	100.0	21.8	43.4	52.2	74.2	92.0	95.0	95.0	3.0	
3.5	99.0	38.8	64.4	69.6	93.0	95.0	95.0	20.7	41.8	49.0	69.7	86.5	90.0	88.0	3.5	
4.0	85.8	37.2	60.2	65.2	90.0	80.0	79.0	19.7	40.6	46.2	66.0	81.2	79.4	77.0	4.0	
4.5	74.0	35.9	56.8	61.4	67.7	66.7	65.6	18.8	39.3	43.9	62.6	67.9	66.2	63.9	4.5	
5.0	59.8	34.7	54.0	58.3	57.2	56.3	55.3	18.0	38.2	41.7	60.0	58.5	56.9	54.6	5.0	
5.5	49.2	33.6	51.3	50.7	49.8	48.9	48.0	17.3	36.5	39.8	53.2	51.8	50.2	48.0	5.5	
6.0	41.4	32.7	45.4	44.7	43.9	43.1	42.1	16.6	34.9	38.0	45.5	44.1	42.6	40.5	6.0	
7.0	30.5	30.5	33.8	33.3	32.6	31.7	31.0	15.3	31.9	35.1	34.0	32.8	31.5	29.6	7.0	
8.0	23.6	26.5	26.1	25.5	24.8	24.1	23.4	14.2	27.9	27.2	26.2	25.1	23.9	22.2	8.0	
9.0	18.5	21.2	20.8	20.3	19.7	19.0	18.3	13.2	22.6	21.8	20.9	20.0	18.7	17.2	9.0	
10.0	14.7	17.3	16.9	16.5	15.9	15.2	14.6	12.4	18.9	18.2	17.4	16.3	15.3	13.7	10.0	
11.0		15.1	14.6	14.2	13.6	13.0	12.3	11.8	16.5	15.8	14.8	13.9	12.8	11.3	11.0	
12.0		12.6	12.1	11.7	11.1	10.5	9.9	11.2	14.0	13.3	12.5	11.5	10.5	9.0	12.0	
14.0		9.0	8.6	8.1	7.7	7.1	6.5	10.0	10.2	9.6	8.8	8.0	7.0	5.6	14.0	
16.0								8.1	7.7	7.1	6.4	5.6	4.6	3.3	16.0	
18.0								6.2	5.9	5.3	4.6	3.8	2.9	1.6	18.0	
20.0															20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	14	14						13						Reeving		
Hook	130t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-23 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)															Working radius (m)
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0																3.0
3.5	23.5	21.7	44.4	56.5	75.0	85.0	78.9									3.5
4.0	22.4	20.4	42.0	53.6	71.4	73.4	70.9									4.0
4.5	21.5	19.4	39.8	51.0	62.7	60.9	58.6	17.3	21.9	25.7	44.5	56.9	51.3	49.3	4.5	
5.0	20.7	18.4	37.8	48.7	54.1	52.4	50.1	16.3	20.8	24.3	42.2	54.2	48.9	46.7	5.0	
5.5	19.9	17.5	36.0	46.6	47.9	46.1	43.9	15.4	19.7	23.1	40.2	44.3	42.6	40.5	5.5	
6.0	19.2	16.7	34.4	44.5	43.0	41.4	39.1	14.6	18.7	21.9	38.3	39.1	37.5	35.4	6.0	
7.0	17.8	15.2	31.3	35.0	33.6	32.1	30.0	13.2	17.1	19.9	35.0	30.8	29.3	27.4	7.0	
8.0	16.5	13.9	28.5	27.5	26.2	24.8	22.8	12.1	15.7	18.2	26.0	24.7	23.3	21.5	8.0	
9.0	15.6	12.9	23.1	22.0	20.9	19.5	17.7	11.1	14.5	16.8	21.0	19.8	18.5	16.8	9.0	
10.0	14.6	11.9	19.1	18.2	17.0	15.8	14.1	10.3	13.5	15.6	18.5	17.3	15.9	14.3	10.0	
11.0	13.8	11.1	16.2	15.3	14.1	12.9	11.3	9.6	12.6	14.5	16.5	15.3	13.9	12.3	11.0	
12.0	13.2	10.5	14.1	13.2	12.1	10.9	9.3	9.0	11.9	13.6	14.3	13.1	11.9	10.2	12.0	
14.0	11.3	9.3	10.6	9.8	8.7	7.6	6.1	8.0	10.6	11.0	10.7	9.6	8.4	6.8	14.0	
16.0	8.6	8.3	8.1	7.3	6.3	5.1	3.7	7.1	8.9	8.6	8.3	7.2	6.0	4.5	16.0	
18.0	6.7	6.5	6.2	5.4	4.5	3.4	2.0	6.3	7.0	6.8	6.5	5.5	4.3	2.8	18.0	
20.0								5.6	5.5	5.2	4.9	4.0	2.8	1.4	20.0	
22.0															22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	11							9							Reeving	
Hook	90t															Hook
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	2	1	1	VII

Table 1-23 Main boom (continued)

Unit: Metric tons

Description of Crane

Outriggers intermediately extended (5.5 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1★	41.7	41.7	41.7	41.7	41.7	41.7	41.7★		
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5	16.5	20.6	23.4	29.4	42.6	47.1	44.8									5.5
6.0	15.8	19.7	22.4	28.1	40.8	40.8	38.6									6.0
7.0	14.4	17.9	20.4	25.6	33.3	31.6	29.6	15.7	19.2	22.4	27.3	33.5	31.8	29.8		7.0
8.0	13.3	16.5	18.8	23.6	27.0	25.4	23.5	14.5	17.6	20.6	25.0	26.4	26.0	24.0		8.0
9.0	12.3	15.2	17.3	21.8	22.2	20.7	18.9	13.4	16.2	19.1	23.0	21.5	21.1	19.3		9.0
10.0	11.4	14.1	16.0	18.8	18.4	17.0	15.3	12.5	15.0	17.8	17.8	17.6	17.2	15.5		10.0
11.0	10.6	13.1	14.9	16.1	15.8	14.4	12.7	11.7	14.0	16.6	15.3	14.9	14.6	13.0		11.0
12.0	9.9	12.2	13.9	14.4	14.0	12.7	11.0	11.0	13.1	14.3	13.8	13.6	13.2	11.5		12.0
14.0	8.8	10.8	11.2	10.9	10.5	9.3	7.7	9.8	11.5	11.2	10.6	10.3	10.1	8.4		14.0
16.0	7.9	9.0	8.6	8.3	8.0	6.8	5.2	8.8	9.0	8.5	8.1	7.8	7.6	6.0		16.0
18.0	7.2	7.2	6.8	6.5	6.2	5.0	3.5	8.0	7.1	6.7	6.3	6.0	5.8	4.2		18.0
20.0	6.0	5.7	5.2	5.0	4.7	3.6	2.1	6.4	5.8	5.4	4.9	4.7	4.4	2.9		20.0
22.0	4.9	4.4	4.1	3.8	3.6	2.5	1.1	5.2	4.7	4.3	3.8	3.6	3.3	1.9		22.0
24.0																24.0
26.0																26.0
28.0																28.0
30.0																30.0
32.0																32.0
34.0																34.0
36.0																36.0
38.0																38.0
40.0																40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	8							6							Reeving	
Hook	90t							55t							Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Table 1-23 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3 ★	50.9	50.9	50.9	50.9	50.9	50.9		50.9 ★
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0	15.5	18.8	22.0	26.5	27.2	26.9	26.3									8.0
9.0	14.5	17.5	20.6	23.4	22.7	22.3	21.8	14.8	17.9	20.8	21.0	20.4	19.7	19.3		9.0
10.0	13.6	16.4	19.4	19.7	19.1	18.7	18.2	14.0	16.9	19.7	18.0	17.4	16.7	16.3		10.0
11.0	12.8	15.4	17.1	16.6	16.0	15.6	15.2	13.2	15.9	16.1	15.4	14.8	14.1	13.7		11.0
12.0	12.1	14.5	14.7	14.2	13.6	13.3	12.8	12.5	15.0	13.9	13.2	12.7	12.0	11.6		12.0
14.0	10.8	11.6	11.0	10.5	10.0	9.7	9.3	11.2	11.0	10.5	9.8	9.4	8.7	8.3		14.0
16.0	9.7	9.1	8.5	8.0	7.6	7.3	6.9	9.4	8.7	8.2	7.6	7.0	6.4	6.1		16.0
18.0	7.6	7.1	6.6	6.1	5.7	5.4	5.0	7.7	7.0	6.4	5.8	5.3	4.7	4.4		18.0
20.0	6.3	5.8	5.2	4.7	4.3	4.0	3.7	6.1	5.4	4.9	4.4	3.9	3.3	3.0		20.0
22.0	5.1	4.6	4.1	3.6	3.2	2.9	2.6	4.9	4.3	3.8	3.1	2.8	2.2	1.9		22.0
24.0	4.2	3.7	3.2	2.7	2.3	2.0	1.7	3.8	3.2	2.8	2.2	1.9	1.3	1.0		24.0
26.0																26.0
28.0																28.0
30.0																30.0
32.0																32.0
34.0																34.0
36.0																36.0
38.0																38.0
40.0																40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	5							4							Reeving	
Hook	55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Description of Crane

Table 1-23 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 12 tons counterweight, over full range																	
Working radius (m)	Boom length (m)														Working radius (m)		
	55.5	55.5	55.5	55.5	55.5	55.5 ★					60.1	60.1	60.1	60.1		60.1 ★	
3.0																3.0	
3.5																3.5	
4.0																4.0	
4.5																4.5	
5.0																5.0	
5.5																5.5	
6.0																6.0	
7.0																7.0	
8.0																8.0	
9.0																9.0	
10.0	14.4	17.3	19.0	18.3	17.4	16.7										10.0	
11.0	13.7	16.4	16.4	15.8	14.8	14.2										11.0	
12.0	13.0	15.0	14.1	13.5	12.6	12.0				12.8	14.0	13.2	12.3	11.5		12.0	
14.0	11.7	11.3	10.5	9.9	9.1	8.5				11.4	10.6	9.8	9.0	8.2		14.0	
16.0	9.4	8.6	7.9	7.4	6.6	6.0				9.0	8.2	7.5	6.6	5.9		16.0	
18.0	7.4	6.7	6.1	5.5	4.8	4.2				7.2	6.4	5.8	4.9	4.2		18.0	
20.0	6.0	5.5	4.8	4.2	3.4	2.9				5.7	5.0	4.4	3.6	2.9		20.0	
22.0	4.8	4.3	3.6	3.0	2.3	1.8				4.7	3.9	3.3	2.5	1.8		22.0	
24.0																24.0	
26.0																26.0	
28.0																28.0	
30.0																30.0	
32.0																32.0	
34.0																34.0	
36.0																36.0	
38.0																38.0	
40.0																40.0	
42.0																42.0	
44.0																44.0	
46.0																46.0	
48.0																48.0	
50.0																50.0	
52.0																52.0	
54.0																54.0	
56.0																56.0	
58.0																58.0	
60.0																60.0	
62.0																62.0	
64.0																64.0	
66.0																66.0	
68.0																68.0	
70.0																70.0	
Reeving	4							3							Reeving		
Hook	55t							25t							Hook		
Telescoping mode	I	1	1	1	1	2	3					1	1	1	2	3	I
	II	1	1	2	3	3	3					1	2	3	3	3	II
	III	2	3	3	3	3	2					3	3	3	3	3	III
	IV	3	3	3	3	2	2					3	3	3	3	2	IV
	V	3	3	3	2	2	2					3	3	3	2	2	V
	VI	3	3	2	2	2	2					3	3	2	2	2	VI
	VII	3	2	2	2	2	2					3	2	2	2	2	VII

Table 1-23 Main boom (continued)

Unit: Metric tons

Outriggers intermediately extended (5.5 m), with 12 tons counterweight, over full range																
Working radius (m)	Boom length (m)														Working radius (m)	
	64.7	64.7	64.7	64.7 ★		69.3	69.3	69.3 ★		73.9	73.9 ★	78.5 ★	82.7 ★	85.0 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0	10.4	9.7	8.8	8.0											14.0	
16.0	8.1	7.4	6.5	5.8		7.4	6.5	5.7		6.3	5.6				16.0	
18.0	6.5	5.8	4.9	4.2		5.7	4.9	4.2		5.0	4.3	4.3			18.0	
20.0	5.1	4.5	3.6	3.0		4.6	3.7	3.0		3.9	3.2	3.4	4.3		20.0	
22.0	4.1	3.4	2.7	2.0		3.6	2.8	2.1		3.0	2.3	2.6	3.2	3.1	22.0	
24.0	3.3	2.6	1.8	1.1		2.9	2.1	1.5		2.2	1.6	1.9	2.3	2.2	24.0	
26.0										1.7	1.0	1.4	1.6	1.5	26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3					3					2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Description of Crane

Table 1-24 Main boom + Jib

Unit: Metric tons

Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range																						
Working radius (m)	Main boom (m) + Jib (m)																				Working radius(m)	
	73.9			78.5			73.9			78.5			73.9			78.5			73.9	78.5		
	10.4			10.4			17.5			17.5			25.5			25.5			33.5	33.5		
	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	0°		
20.0	6.5																				20.0	
22.0	6.4	5.9		4.8				3.9													22.0	
24.0	6.3	5.8	5.5	4.7	4.5			3.8	3.0		3.3										24.0	
26.0	6.2	5.7	5.4	4.6	4.4	4.3	3.7	3.0	2.6	3.2	2.7			2.6							26.0	
28.0	6.1	5.6	5.3	4.5	4.3	4.2	3.6	2.9	2.6	3.1	2.7	2.4		2.6	2.2						28.0	
30.0	6.0	5.5	5.1	4.4	4.2	4.1	3.5	2.9	2.5	3.0	2.6	2.4	2.5	2.2	2.0	2.0				1.5	30.0	
32.0	5.8	5.3	4.9	4.3	4.1	4.0	3.4	2.8	2.5	2.9	2.6	2.3	2.5	2.2	2.0	2.0	1.8			1.5	1.1	32.0
34.0	5.6	5.1	4.7	4.2	4.0	3.9	3.3	2.8	2.4	2.8	2.5	2.3	2.4	2.1	2.0	2.0	1.8	1.7		1.5	1.1	34.0
36.0	5.4	4.9	4.6	4.1	3.9	3.8	3.2	2.7	2.4	2.7	2.5	2.2	2.4	2.1	1.9	1.9	1.8	1.7	1.4		1.1	36.0
38.0	5.2	4.7	4.5	4.0	3.8	3.7	3.1	2.7	2.4	2.6	2.4	2.2	2.3	2.1	1.9	1.9	1.7	1.7	1.4	1.1		38.0
40.0	5.0	4.6	4.4	3.9	3.7	3.6	3.0	2.6	2.3	2.6	2.4	2.1	2.3	2.0	1.9	1.9	1.7	1.6	1.4	1.1		40.0
42.0	4.8	4.5	4.3	3.8	3.6	3.5	2.9	2.6	2.3	2.5	2.3	2.1	2.2	2.0	1.8	1.8	1.7	1.6	1.3	1.1		42.0
44.0	4.6	4.4	4.2	3.7	3.5	3.4	2.8	2.5	2.3	2.5	2.3	2.1	2.2	2.0	1.8	1.8	1.6	1.6	1.3	1.1		44.0
46.0	4.4	4.3	4.1	3.6	3.4	3.3	2.7	2.5	2.2	2.4	2.2	2.0	2.1	1.9	1.8	1.8	1.6	1.5	1.3	1.0		46.0
48.0	4.1	4.2	4.0	3.5	3.3	3.2	2.6	2.4	2.2	2.4	2.2	2.0	2.1	1.9	1.7	1.7	1.6	1.5	1.2	1.0		48.0
50.0	3.8	3.9	3.9	3.4	3.2	3.1	2.6	2.4	2.2	2.3	2.1	2.0	2.0	1.9	1.7	1.7	1.5	1.5	1.2	1.0		50.0
52.0	3.5	3.6	3.6	3.3	3.1	3.0	2.5	2.3	2.1	2.3	2.1	2.0	2.0	1.8	1.7	1.6	1.5	1.4	1.2	1.0		52.0
54.0	3.2	3.3	3.3	3.2	3.0	2.9	2.5	2.3	2.1	2.2	2.1	1.9	1.9	1.8	1.6	1.6	1.5	1.4	1.1	1.0		54.0
56.0	2.9	3.0	3.0	2.9	2.8	2.8	2.4	2.2	2.1	2.2	2.0	1.9	1.9	1.8	1.6	1.5	1.4	1.4	1.1	1.0		56.0
58.0	2.6	2.7	2.7	2.6	2.6	2.6	2.4	2.2	2.0	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.1	1.0		58.0
60.0	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.1	2.0	2.1	2.0	1.9	1.8	1.7	1.5	1.4	1.3	1.3	1.0			60.0
62.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.7	1.7	1.5	1.4	1.3	1.3	1.0			62.0
64.0	1.7	1.8	1.8	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.8	1.7	1.6	1.5	1.3	1.2	1.2	1.0			64.0
66.0	1.4	1.5	1.5	1.8	1.8	1.8	1.8	1.9	1.8	1.9	1.9	1.8	1.6	1.6	1.4	1.3	1.2	1.2				66.0
68.0	1.1	1.2	1.2	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.6	1.6	1.4	1.2	1.1	1.1				68.0
70.0				1.2	1.3	1.3	1.3	1.5	1.5	1.5	1.6	1.6	1.4	1.5	1.4	1.2	1.1	1.1				70.0
72.0							1.0	1.2	1.2	1.3	1.4	1.4	1.2	1.3	1.3	1.1	1.0					72.0
74.0										1.1	1.2	1.2	1.0	1.1	1.1	1.0						74.0
76.0																						76.0
78.0																						78.0
80.0																						80.0
82.0																						82.0
84.0																						84.0
86.0																						86.0
Reeving																						Reeving
Hook																						Hook

Note:

- ①The telescoping mode of 73.9 m main boom is 3333332.
- ②The telescoping mode of 78.5 m main boom is 3333333.

Table 1-25 Main boom + Jib

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																					
Working radius (m)	Main boom (m) + Jib (m)																				Working radius(m)
	73.9			78.5			73.9			78.5			73.9			78.5			73.9	78.5	
	10.4			10.4			17.5			17.5			25.5			25.5			33.5	33.5	
	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	0°	
20.0	6.5																				20.0
22.0	6.4	5.8		4.8			3.9														22.0
24.0	6.3	5.7	5.5	4.7	4.5		3.8	3		3.3											24.0
26.0	6.2	5.6	5.4	4.6	4.4	4.3	3.7	3	2.6	3.2	2.7		2.6								26.0
28.0	6.1	5.5	5.3	4.5	4.3	4.2	3.6	2.9	2.6	3.1	2.7	2.4	2.6	2.2							28.0
30.0	6	5.5	5.1	4.4	4.2	4.1	3.5	2.9	2.5	3	2.6	2.4	2.5	2.2	2	2			1.5		30.0
32.0	5.8	5.3	4.9	4.3	4.1	4	3.4	2.8	2.5	2.9	2.6	2.3	2.5	2.2	2	2	1.8		1.5	1.1	32.0
34.0	5.6	5.1	4.7	4.2	4	3.9	3.3	2.8	2.4	2.8	2.5	2.3	2.4	2.1	2	2	1.8	1.7	1.5	1.1	34.0
36.0	5.4	4.8	4.6	4.1	3.9	3.8	3.2	2.7	2.4	2.7	2.5	2.2	2.4	2.1	1.9	1.9	1.8	1.7	1.4	1.1	36.0
38.0	5.2	4.7	4.5	4	3.8	3.7	3.1	2.7	2.4	2.6	2.4	2.2	2.3	2.1	1.9	1.9	1.7	1.7	1.4	1.1	38.0
40.0	5	4.6	4.4	3.9	3.7	3.6	3	2.6	2.3	2.6	2.4	2.1	2.3	2	1.9	1.9	1.7	1.6	1.4	1.1	40.0
42.0	4.4	4.4	4.3	3.8	3.6	3.5	2.9	2.6	2.3	2.5	2.3	2.1	2.2	2	1.8	1.8	1.7	1.6	1.3	1.1	42.0
44.0	3.9	4.2	4.2	3.7	3.5	3.4	2.8	2.5	2.3	2.5	2.3	2.1	2.2	2	1.8	1.8	1.6	1.6	1.3	1.1	44.0
46.0	3.4	3.7	3.9	3.6	3.4	3.3	2.7	2.5	2.2	2.4	2.2	2	2.1	1.9	1.8	1.8	1.6	1.5	1.3	1	46.0
48.0	2.9	3.2	3.4	3.3	3.3	3.2	2.6	2.4	2.2	2.4	2.2	2	2.1	1.9	1.7	1.7	1.6	1.5	1.2	1	48.0
50.0	2.5	2.8	2.9	2.8	3	3.1	2.6	2.4	2.2	2.3	2.1	2	2	1.9	1.7	1.7	1.5	1.5	1.2	1	50.0
52.0	2.1	2.4	2.4	2.4	2.6	2.7	2.5	2.3	2.1	2.3	2.1	2	2	1.8	1.7	1.6	1.5	1.4	1.2	1	52.0
54.0	1.7	1.9	2	2.1	2.2	2.4	2.2	2.3	2.1	2.2	2.1	1.9	1.9	1.8	1.6	1.6	1.5	1.4	1.1	1	54.0
56.0	1.3	1.5	1.7	1.7	1.8	2	1.8	2.2	2.1	2	2	1.9	1.9	1.8	1.6	1.5	1.4	1.4	1.1	1	56.0
58.0	1	1.2	1.3	1.3	1.4	1.6	1.5	1.9	2	1.7	2	1.9	1.6	1.7	1.6	1.5	1.4	1.3	1.1	1	58.0
60.0				1	1.2	1.2	1.2	1.5	1.8	1.4	1.8	1.9	1.3	1.6	1.5	1.4	1.3	1.3	1		60.0
62.0						1		1.2	1.4	1.1	1.4	1.6	1.1	1.3	1.4	1.3	1.3	1.3	1		62.0
64.0									1.1		1.2	1.3		1.1	1.2	1	1.2	1.2			64.0
66.0												1.1					1	1.2			66.0
68.0																					68.0
70.0																					70.0
72.0																					72.0
74.0																					74.0
76.0																					76.0
78.0																					78.0
80.0																					80.0
82.0																					82.0
84.0																					84.0
86.0																					86.0
Reeving																					Reeving
Hook																					Hook

Note:

- ①The telescoping mode of 73.9 m main boom is 3333332.
- ②The telescoping mode of 78.5 m main boom is 3333333.

Table 1-26 Main boom + Jib

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																					
Working radius (m)	Main boom (m) + Jib (m)																			Working radius(m)	
	73.9			78.5			73.9			78.5			73.9			78.5			73.9		78.5
	10.4			10.4			17.5			17.5			25.5			25.5			33.5		33.5
	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°		0°
20.0	6.5																			20.0	
22.0	6.4	5.9		4.8			3.9													22.0	
24.0	6.3	5.8	5.5	4.7	4.5		3.8	3		3.3										24.0	
26.0	6.2	5.7	5.4	4.6	4.4	4.3	3.7	3	2.6	3.2	2.7		2.6							26.0	
28.0	6.1	5.6	5.3	4.5	4.3	4.2	3.6	2.9	2.6	3.1	2.7	2.4	2.6	2.2						28.0	
30.0	6	5.5	5.1	4.4	4.2	4.1	3.5	2.9	2.5	3	2.6	2.4	2.5	2.2	2	2			1.5	30.0	
32.0	5.8	5.3	4.9	4.3	4.1	4	3.4	2.8	2.5	2.9	2.6	2.3	2.5	2.2	2	2	1.8		1.5	1.1	32.0
34.0	5.5	5.1	4.7	4.2	4	3.9	3.3	2.8	2.4	2.8	2.5	2.3	2.4	2.1	2	2	1.8	1.7	1.5	1.1	34.0
36.0	4.8	4.9	4.6	4.1	3.9	3.8	3.2	2.7	2.4	2.7	2.5	2.2	2.4	2.1	1.9	1.9	1.8	1.7	1.4	1.1	36.0
38.0	4.1	4.4	4.5	4	3.8	3.7	3.1	2.7	2.4	2.6	2.4	2.2	2.3	2.1	1.9	1.9	1.7	1.7	1.4	1.1	38.0
40.0	3.5	3.8	4.1	3.7	3.7	3.6	3	2.6	2.3	2.6	2.4	2.1	2.3	2	1.9	1.9	1.7	1.6	1.4	1.1	40.0
42.0	3	3.3	3.5	3.2	3.5	3.5	2.9	2.6	2.3	2.5	2.3	2.1	2.2	2	1.8	1.8	1.7	1.6	1.3	1.1	42.0
44.0	2.4	2.8	3	2.7	3	3.2	2.8	2.5	2.3	2.5	2.3	2.1	2.2	2	1.8	1.8	1.6	1.6	1.3	1.1	44.0
46.0	2.1	2.3	2.5	2.3	2.6	2.7	2.4	2.5	2.2	2.4	2.2	2	2.1	1.9	1.8	1.8	1.6	1.5	1.3	1	46.0
48.0	1.6	1.9	2.1	1.9	2.2	2.3	1.9	2.4	2.2	2.2	2.2	2	2.1	1.9	1.7	1.7	1.6	1.5	1.2	1	48.0
50.0	1.2	1.5	1.6	1.6	1.7	1.9	1.7	2.2	2.2	1.8	2.1	2	1.7	1.9	1.7	1.7	1.5	1.5	1.2	1	50.0
52.0		1.1	1.2	1.2	1.4	1.6	1.3	1.8	2.1	1.5	1.9	2	1.4	1.8	1.7	1.6	1.5	1.4	1.2	1	52.0
54.0					1	1.2	1	1.4	1.7	1.1	1.7	1.9	1.1	1.4	1.6	1.3	1.5	1.4	1	1	54.0
56.0								1.1	1.4		1.3	1.6		1.2	1.4	1	1.3	1.4	1	1	56.0
58.0									1		1	1.2			1.1		1.1	1.3		1	58.0
60.0												1						1			60.0
62.0																					62.0
64.0																					64.0
66.0																					66.0
68.0																					68.0
70.0																					70.0
72.0																					72.0
74.0																					74.0
76.0																					76.0
78.0																					78.0
80.0																					80.0
82.0																					82.0
84.0																					84.0
86.0																					86.0
Reeving																					Reeving
Hook																					Hook

Note:

- ①The telescoping mode of 73.9 m main boom is 3333332.
- ②The telescoping mode of 78.5 m main boom is 3333333.

Table 1-27 Main boom + Jib

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																					
Working radius (m)	Main boom (m) + Jib (m)																			Working radius(m)	
	73.9			78.5			73.9			78.5			73.9			78.5			73.9		78.5
	10.4			10.4			17.5			17.5			25.5			25.5			33.5		33.5
	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°		0°
20.0	6.5																			20.0	
22.0	6.4	5.9		4.8			3.9													22.0	
24.0	6.3	5.8	5.5	4.7	4.5		3.8	3		3.3										24.0	
26.0	6.2	5.7	5.4	4.6	4.4	4.3	3.7	3	2.6	3.2	2.7		2.6							26.0	
28.0	5.9	5.6	5.3	4.5	4.3	4.2	3.6	2.9	2.6	3.1	2.7	2.4	2.6	2.2						28.0	
30.0	5	5.5	5.1	4.4	4.2	4.1	3.5	2.9	2.5	3	2.6	2.4	2.5	2.2	2	2			1.5	30.0	
32.0	4.3	4.8	4.9	4.2	4.1	4	3.4	2.8	2.5	2.9	2.6	2.3	2.5	2.2	2	2	1.8		1.5	1.1	32.0
34.0	3.6	3.9	4.3	3.6	4	3.9	3.3	2.8	2.4	2.8	2.5	2.3	2.4	2.1	2	2	1.8	1.7	1.5	1.1	34.0
36.0	2.9	3.3	3.6	3	3.5	3.8	3.2	2.7	2.4	2.7	2.5	2.2	2.4	2.1	1.9	1.9	1.8	1.7	1.4	1.1	36.0
38.0	2.3	2.7	3	2.5	2.9	3.3	2.8	2.7	2.4	2.6	2.4	2.2	2.3	2.1	1.9	1.9	1.7	1.7	1.4	1.1	38.0
40.0	1.8	2.1	2.5	2.1	2.4	2.7	2.2	2.6	2.3	2.4	2.4	2.1	2.2	2	1.9	1.9	1.7	1.6	1.4	1.1	40.0
42.0	1.4	1.7	2	1.6	2	2.3	1.8	2.5	2.3	1.9	2.3	2.1	1.8	2	1.8	1.8	1.7	1.6	1.3	1.1	42.0
44.0		1.3	1.5	1.2	1.6	1.8	1.4	2	2.3	1.5	2.2	2.1	1.4	2	1.8	1.7	1.6	1.6	1.3	1.1	44.0
46.0			1.1		1.2	1.3	1	1.6	2	1.2	1.8	2	1.1	1.6	1.8	1.4	1.6	1.5	1.2	1	46.0
48.0						1		1.2	1.5		1.4	1.7		1.3	1.6	1	1.4	1.5	1	1	48.0
50.0									1.2		1	1.4		1	1.3		1.1	1.4		1	50.0
52.0												1.1						1.1			52.0
54.0																					54.0
56.0																					56.0
58.0																					58.0
60.0																					60.0
62.0																					62.0
64.0																					64.0
66.0																					66.0
68.0																					68.0
70.0																					70.0
72.0																					72.0
74.0																					74.0
76.0																					76.0
78.0																					78.0
80.0																					80.0
82.0																					82.0
84.0																					84.0
86.0																					86.0
Reeving																					Reeving
Hook																					Hook

Note:

- ①The telescoping mode of 73.9 m main boom is 3333332.
- ②The telescoping mode of 78.5 m main boom is 3333333.

Table 1-28 Main boom + Jib

Unit: Metric tons

Outriggers fully extended (8.3 m), with 12 tons counterweight, over full range																							
Working radius (m)	Main boom (m) + Jib (m)																			Working radius(m)			
	73.9			78.5			73.9			78.5			73.9			78.5			73.9		78.5		
	10.4			10.4			17.5			17.5			25.5			25.5			33.5		33.5		
	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°		0°		
20.0	6.5																				20.0		
22.0	6.3	5.9		4.8				3.9													22.0		
24.0	5.2	5.8	5.5	4.7	4.5			3.8	3.0			3.3									24.0		
26.0	4.3	5.0	5.4	4.3	4.4	4.3		3.7	3.0	2.6		3.2	2.7		2.6						26.0		
28.0	3.6	4.0	4.3	3.5	4.1	4.2		3.6	2.9	2.6		3.1	2.7	2.4	2.6	2.2					28.0		
30.0	2.9	3.1	3.4	2.9	3.2	3.5		3.3	2.9	2.5		3.0	2.6	2.4	2.5	2.2	2.0	2.0		1.5	30.0		
32.0	2.2	2.4	2.7	2.3	2.6	2.8		2.6	2.8	2.5		2.7	2.6	2.3	2.5	2.2	2.0	2.0	1.8	1.5	1.1	32.0	
34.0	1.6	1.8	2.1	1.8	2.0	2.2		2.0	2.8	2.4		2.1	2.5	2.3	2.0	2.1	2.0	2.0	1.8	1.7	1.5	1.1	34.0
36.0	1.1	1.3	1.6	1.3	1.5	1.7		1.6	2.2	2.4		1.6	2.5	2.2	1.5	2.1	1.9	1.6	1.8	1.7	1.4	1.1	36.0
38.0		0.9	1.1	0.9	1.1	1.2		1.1	1.7	2.4		1.2	1.8	2.2	1.1	1.6	1.9	1.3	1.7	1.7	1.1	1.1	38.0
40.0						0.9			1.2	1.6		0.8	1.4	1.7		1.3	1.9	0.9	1.4	1.6	0.8	1.0	40.0
42.0									0.8	1.2			0.9	1.3		0.9	1.3		1.0	1.6		0.7	42.0
44.0										0.8				0.9			0.9		0.7	1.0			44.0
46.0																			0.7				46.0
48.0																							48.0
50.0																							50.0
52.0																							52.0
54.0																							54.0
56.0																							56.0
58.0																							58.0
60.0																							60.0
62.0																							62.0
64.0																							64.0
66.0																							66.0
68.0																							68.0
70.0																							70.0
72.0																							72.0
74.0																							74.0
76.0																							76.0
78.0																							78.0
80.0																							80.0
82.0																							82.0
84.0																							84.0
86.0																							86.0
Reeving																							Reeving
Hook																							Hook

Note:

- ①The telescoping mode of 73.9 m main boom is 3333332.
- ②The telescoping mode of 78.5 m main boom is 3333333.

Table 1-29 Main boom + Tip boom

Unit: Metric tons

Description of Crane

Working radius (m)	Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range														Working radius (m)	
	Main boom (m) + Tip boom (m)															
	14.1★	18.7	18.7	18.7	18.7	18.7	18.7★	23.3	23.3	23.3	23.3	23.3	23.3	23.3★		
3.0															3.0	
3.5	24.0														3.5	
4.0	23.8		22.0	22.0	22.0	22.0	22.5								4.0	
4.5	23.6	21.5	21.8	21.8	21.8	21.8	22.3								4.5	
5.0	23.4	21.3	21.6	21.6	21.6	21.6	22.1		21.0	21.4	21.5	21.5	22.1	22.6	5.0	
5.5	23.2	21.1	21.4	21.4	21.4	21.4	21.9	20.3	20.9	21.3	21.4	21.4	22.0	22.5	5.5	
6.0	23.0	21.0	21.3	21.3	21.3	21.3	21.8	20.1	20.8	21.2	21.3	21.3	21.9	22.4	6.0	
7.0	22.0	20.5	20.8	20.7	20.7	20.7	21.3	19.4	20.4	20.8	20.9	20.9	21.5	22.0	7.0	
8.0	21.1	20.0	20.3	20.3	20.3	20.3	20.8	18.8	20.0	20.4	20.5	20.6	21.1	21.6	8.0	
9.0	20.4	19.6	19.9	19.9	19.9	19.9	20.4	18.2	19.7	20.1	20.3	20.3	20.7	21.3	9.0	
10.0	19.8	19.3	19.6	19.6	19.6	19.6	20.1	17.7	19.4	19.8	19.9	19.9	20.4	20.9	10.0	
11.0	18.9	18.9	19.2	19.2	19.2	19.2	19.7	17.2	19.2	19.5	19.6	19.6	20.1	20.6	11.0	
12.0	18.0	18.3	18.6	18.6	18.6	18.6	19.1	16.8	18.9	19.3	19.4	19.3	19.8	20.3	12.0	
14.0	16.9	17.4	17.6	17.6	17.6	17.6	18.1	16.0	17.3	18.6	18.7	18.8	19.2	19.7	14.0	
16.0		16.8	17.0	17.0	17.0	17.0	17.5	15.0	15.4	16.6	18.0	18.0	18.4	18.9	16.0	
18.0		16.5	16.7	16.7	16.7	16.7	17.2	14.3	13.8	14.9	17.3	17.3	17.7	18.2	18.0	
20.0								13.7	12.5	13.4	16.8	16.8	17.3	17.8	20.0	
22.0								13.3	11.5	12.3	16.6	16.6	17.1	17.6	22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4	4						4						Reeving		
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	2	I	
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	1	2	2	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Table 1-29 Main boom + Tip boom (continued)

Unit: Metric tons

Working radius (m)	Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range														Working radius (m)	
	Main boom (m) + Tip boom (m)															
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5				21.4	21.5	22.1	22.5								5.5	
6.0	17.6	13.1	20.8	21.3	21.3	22.0	22.4								6.0	
7.0	16.3	12.0	20.5	21.0	21.0	21.6	22.1	10.6	12.5	16.3	20.2	20.7	21.4	21.8	7.0	
8.0	15.2	11.1	20.2	20.7	20.7	21.3	21.8	9.8	11.7	15.1	20.0	20.5	21.1	21.6	8.0	
9.0	14.2	10.3	20.0	20.4	20.4	21.0	21.5	9.1	10.9	14.1	19.7	20.2	20.8	21.3	9.0	
10.0	13.4	9.6	19.6	20.2	20.2	20.8	21.3	8.5	10.2	13.2	19.6	20.1	20.6	21.1	10.0	
11.0	12.7	9.0	19.4	19.9	19.9	20.5	21.0	8.0	9.7	12.4	19.4	19.9	20.4	20.9	11.0	
12.0	12.1	8.5	19.0	19.7	19.8	20.3	20.8	7.5	9.2	11.7	19.2	19.7	20.2	20.7	12.0	
14.0	10.8	7.5	16.9	19.0	19.1	19.7	20.1	6.6	8.2	10.4	18.2	19.2	19.7	20.2	14.0	
16.0	9.8	6.7	15.2	18.6	18.7	19.3	19.7	5.9	7.4	9.3	16.6	18.7	19.3	19.8	16.0	
18.0	8.8	6.0	13.6	17.1	18.0	18.5	18.9	5.3	6.7	8.4	15.2	18.4	18.9	19.4	18.0	
20.0	8.0	5.4	12.3	15.5	17.4	17.9	18.2	4.8	6.2	7.7	14.0	17.5	18.6	19.1	20.0	
22.0	7.2	4.8	11.2	14.2	16.9	17.4	17.8	4.3	5.6	6.9	12.7	16.0	18.0	18.5	22.0	
24.0	6.6	4.3	10.2	13.0	16.6	17.1	16.2	3.9	5.1	6.2	11.7	14.8	17.5	16.9	24.0	
26.0	6.0	3.9	9.4	12.1	15.9	15.0	13.8	3.5	4.6	5.6	10.8	13.8	15.8	14.5	26.0	
28.0								3.1	4.2	5.1	10.0	12.8	13.7	12.5	28.0	
30.0								2.8	3.8	4.6	9.3	12.0	12.0	10.8	30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	2	1	1	1	1	2	I	
	II	1	1	1	1	1	2	2	2	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	2	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	1	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	1	1	1	VII

Table 1-29 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1★	41.7	41.7	41.7	41.7	41.7	41.7	41.7★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	10.2	12.0	15.5	19.7	19.9	20.9	21.5								8.0	
9.0	9.5	11.3	14.5	18.6	19.7	20.7	21.3	9.8	11.6	14.9	19.0	19.3	19.9	21.0	9.0	
10.0	9.0	10.7	13.6	17.4	19.5	20.5	21.1	9.3	11.0	14.1	17.9	19.2	19.8	20.9	10.0	
11.0	8.5	10.2	12.8	16.4	19.4	20.4	20.9	8.8	10.6	13.3	16.9	19.1	19.7	20.7	11.0	
12.0	8.0	9.7	12.1	15.5	19.3	20.3	20.8	8.4	10.1	12.6	16.0	18.9	19.6	20.6	12.0	
14.0	7.1	8.7	10.7	13.8	18.8	19.8	20.3	7.5	9.2	11.3	14.2	17.8	19.2	20.2	14.0	
16.0	6.4	7.9	9.6	12.4	17.7	19.4	19.9	6.9	8.4	10.2	12.8	16.1	18.8	19.8	16.0	
18.0	5.8	7.3	8.7	11.2	16.3	19.0	19.5	6.3	7.7	9.3	11.6	14.6	17.7	19.5	18.0	
20.0	5.3	6.7	7.9	10.3	15.1	18.7	19.2	5.8	7.2	8.6	10.6	13.4	16.5	19.3	20.0	
22.0	4.9	6.2	7.2	9.4	14.1	18.1	19.0	5.4	6.6	7.9	9.7	12.3	15.4	18.7	22.0	
24.0	4.5	5.7	6.6	8.6	13.0	16.9	17.7	5.0	6.1	7.3	8.9	11.3	14.5	18.1	24.0	
26.0	4.1	5.2	6.0	7.8	12.0	15.7	15.3	4.6	5.5	6.7	8.2	10.4	13.6	16.0	26.0	
28.0	3.7	4.7	5.4	7.1	11.2	14.6	13.3	4.2	5.0	6.1	7.5	9.5	12.7	14.0	28.0	
30.0	3.3	4.2	4.9	6.5	10.5	12.9	11.6	3.8	4.5	5.6	6.8	8.7	11.9	12.3	30.0	
32.0	3.0	3.8	4.5	5.9	9.8	11.4	10.1	3.5	4.1	5.1	6.2	8.0	11.1	10.8	32.0	
34.0	2.7	3.4	4.1	5.4	9.2	10.0	8.8	3.2	3.7	4.7	5.7	7.4	10.5	9.5	34.0	
36.0								2.9	3.4	4.3	5.2	6.8	9.6	8.4	36.0	
38.0								2.7	3.1	4.0	4.8	6.3	8.6	7.4	38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t 55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	I	
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Description of Crane

Table 1-29 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3★	50.9	50.9	50.9	50.9	50.9	50.9	50.9★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0	8.9	10.6	13.5	17.1	18.9	19.6	19.6								11.0	
12.0	8.5	10.2	12.9	16.3	18.6	19.5	19.5	8.6	10.3	13.1	17.0	18.1	19.2	19.4	12.0	
14.0	7.8	9.4	11.7	14.7	17.8	18.7	19.2	7.9	9.5	12.0	15.5	17.4	18.4	18.7	14.0	
16.0	7.1	8.6	10.7	13.3	16.4	16.8	18.7	7.2	8.8	11.0	14.2	15.8	17.7	18.0	16.0	
18.0	6.5	8.0	9.8	12.2	14.9	15.3	18.1	6.7	8.2	10.1	13.0	14.2	16.3	17.3	18.0	
20.0	6.0	7.4	9.0	11.2	13.6	13.9	17.5	6.2	7.7	9.4	12.0	12.9	15.0	16.8	20.0	
22.0	5.6	7.0	8.4	10.4	12.5	12.8	16.6	5.8	7.2	8.7	11.2	11.9	13.9	16.3	22.0	
24.0	5.2	6.6	7.8	9.6	11.5	11.8	15.7	5.4	6.8	8.2	10.5	11.0	12.9	15.3	24.0	
26.0	4.9	6.1	7.3	9.0	10.7	10.9	14.9	5.1	6.4	7.7	9.8	10.1	12.0	14.2	26.0	
28.0	4.6	5.6	6.8	8.4	9.9	10.1	14.1	4.8	6.0	7.2	9.2	9.3	11.1	13.2	28.0	
30.0	4.2	5.1	6.4	7.6	9.0	9.2	13.0	4.5	5.6	6.8	8.5	8.6	10.4	12.3	30.0	
32.0	3.9	4.7	5.9	7.0	8.2	8.4	11.5	4.3	5.3	6.4	7.9	7.9	9.7	11.2	32.0	
34.0	3.6	4.3	5.4	6.5	7.5	7.7	10.2	4.1	5.0	6.1	7.3	7.2	9.0	9.9	34.0	
36.0	3.3	3.9	4.9	6.0	6.9	7.1	9.1	3.9	4.6	5.7	6.7	6.6	8.3	8.7	36.0	
38.0	3.0	3.6	4.5	5.6	6.4	6.5	8.1	3.6	4.2	5.2	6.1	6.0	7.7	7.7	38.0	
40.0	2.7	3.3	4.1	5.2	5.9	6.0	7.2	3.3	3.9	4.8	5.6	5.5	7.1	6.8	40.0	
42.0	2.4	3.0	3.7	4.8	5.4	5.5	6.4	3.0	3.6	4.4	5.1	5.0	6.3	6.0	42.0	
44.0	2.2	2.8	3.4	4.4	4.9	5.0	5.7	2.7	3.3	4.0	4.7	4.6	5.6	5.3	44.0	
46.0								2.5	3.0	3.7	4.3	4.2	4.9	4.6	46.0	
48.0								2.3	2.7	3.4	3.9	3.8	4.3	4.0	48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Table 1-29 Main boom + Tip boom (continued)

Unit: Metric tons

Working radius(m)	Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range														Working radius(m)
	Main boom (m) + Tip boom (m)														
3.0															3.0
3.5															3.5
4.0															4.0
4.5															4.5
5.0															5.0
5.5															5.5
6.0															6.0
7.0															7.0
8.0															8.0
9.0															9.0
10.0															10.0
11.0															11.0
12.0															12.0
14.0	8.1	9.6	12.5	16.0	17.1	17.5									14.0
16.0	7.5	9.0	11.6	14.9	16.5	16.9			7.6	9.4	12.0	15.2	15.7		16.0
18.0	6.9	8.4	10.7	13.6	15.2	16.3			7.1	8.8	11.2	14.2	15.2		18.0
20.0	6.4	7.9	10.0	12.4	14.0	15.6			6.7	8.3	10.5	13.1	14.4		20.0
22.0	6.0	7.4	9.4	11.3	12.9	14.5			6.3	7.9	9.9	12.1	13.4		22.0
24.0	5.6	7.0	8.8	10.4	11.9	13.5			5.9	7.5	9.4	11.3	12.5		24.0
26.0	5.3	6.6	8.3	9.6	11.0	12.6			5.6	7.1	8.9	10.4	11.6		26.0
28.0	5.0	6.3	7.8	8.8	10.2	11.8			5.3	6.8	8.5	9.7	10.8		28.0
30.0	4.7	6.0	7.4	8.1	9.5	11.0			5.0	6.5	7.9	9.0	10.1		30.0
32.0	4.5	5.6	7.0	7.5	8.8	10.2			4.8	6.2	7.3	8.3	9.4		32.0
34.0	4.3	5.3	6.6	6.9	8.2	9.5			4.6	5.9	6.7	7.7	8.7		34.0
36.0	4.1	5.0	6.3	6.4	7.6	8.7			4.4	5.6	6.2	7.2	8.1		36.0
38.0	3.9	4.7	6.0	5.9	7.1	7.7			4.2	5.3	5.7	6.7	7.4		38.0
40.0	3.7	4.4	5.5	5.3	6.5	6.8			4.0	5.0	5.3	6.2	6.8		40.0
42.0	3.5	4.1	5.0	4.8	6.0	6.0			3.8	4.7	4.8	5.7	6.0		42.0
44.0	3.2	3.8	4.6	4.4	5.5	5.3			3.6	4.4	4.3	5.2	5.3		44.0
46.0	2.9	3.5	4.2	4.0	5.0	4.6			3.3	4.1	3.9	4.7	4.6		46.0
48.0	2.6	3.2	3.8	3.6	4.4	4.0			3.1	3.8	3.5	4.3	4.0		48.0
50.0	2.4	2.9	3.4	3.2	3.8	3.4			2.8	3.4	3.1	3.9	3.4		50.0
52.0	2.2	2.6	3.1	2.9	3.3	2.9			2.6	3.1	2.8	3.4	2.9		52.0
54.0									2.4	2.8	2.5	2.9	2.4		54.0
56.0									2.2	2.5	2.2	2.5	2.0		56.0
58.0															58.0
60.0															60.0
62.0															62.0
64.0															64.0
66.0															66.0
68.0															68.0
70.0															70.0
Reeving	4							3							Reeving
Hook	25t							25t							Hook
Telescoping mode	I	1	1	1	1	2	3			1	1	1	2	3	I
	II	1	1	2	3	3	3			1	2	3	3	3	II
	III	2	3	3	3	3	2			3	3	3	3	3	III
	IV	3	3	3	3	2	2			3	3	3	3	2	IV
	V	3	3	3	2	2	2			3	3	3	2	2	V
	VI	3	3	2	2	2	2			3	3	2	2	2	VI
	VII	3	2	2	2	2	2			3	2	2	2	2	VII

Description of Crane

Table 1-29 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 64 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	64.7	64.7	64.7	64.7★		69.3	69.3	69.3★		73.9	73.9★	78.5★	82.7★	85.0★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0															14.0	
16.0															16.0	
18.0	7.0	8.6	10.9	13.3		7.0	8.6	10.5							18.0	
20.0	6.7	8.3	10.4	12.6		6.7	8.3	10.1		6.5	7.7	6.2			20.0	
22.0	6.4	8.0	10.0	11.9		6.4	8.0	9.7		6.3	7.5	6.1	5.2		22.0	
24.0	6.1	7.7	9.6	11.2		6.1	7.7	9.3		6.1	7.3	6.0	5.1	4.6	24.0	
26.0	5.8	7.4	9.2	10.5		5.9	7.4	8.9		5.9	7.1	5.9	5.0	4.5	26.0	
28.0	5.5	7.1	8.8	9.8		5.7	7.1	8.5		5.7	6.9	5.8	4.9	4.4	28.0	
30.0	5.3	6.8	8.4	9.1		5.5	6.9	8.1		5.5	6.7	5.7	4.8	4.3	30.0	
32.0	5.1	6.5	7.8	8.5		5.3	6.7	7.7		5.3	6.5	5.6	4.7	4.2	32.0	
34.0	4.9	6.2	7.2	7.9		5.1	6.5	7.3		5.1	6.3	5.4	4.6	4.1	34.0	
36.0	4.7	5.9	6.7	7.4		4.9	6.3	6.9		4.9	6.1	5.2	4.5	4.0	36.0	
38.0	4.5	5.5	6.2	6.9		4.7	6.0	6.5		4.8	5.9	5.0	4.4	3.9	38.0	
40.0	4.3	5.1	5.8	6.4		4.5	5.6	6.1		4.7	5.6	4.8	4.3	3.8	40.0	
42.0	4.1	4.8	5.4	5.9		4.3	5.2	5.7		4.6	5.3	4.7	4.2	3.7	42.0	
44.0	3.9	4.4	5.0	5.4		4.2	4.9	5.3		4.5	5.0	4.6	4.1	3.6	44.0	
46.0	3.7	4.0	4.6	4.9		3.9	4.5	4.9		4.3	4.7	4.5	4.0	3.5	46.0	
48.0	3.5	3.6	4.2	4.3		3.6	4.1	4.5		4.1	4.4	4.3	3.8	3.4	48.0	
50.0	3.3	3.3	3.8	3.7		3.3	3.7	4.1		3.8	4.1	4.0	3.6	3.3	50.0	
52.0	3.1	3.0	3.5	3.2		3.0	3.4	3.6		3.5	3.8	3.7	3.4	3.2	52.0	
54.0	2.9	2.7	3.2	2.7		2.7	3.1	3.1		3.2	3.4	3.4	3.2	3.1	54.0	
56.0	2.6	2.4	2.9	2.3		2.4	2.8	2.6		2.9	3.0	3.1	3.0	2.9	56.0	
58.0	2.3	2.1	2.5	1.9		2.1	2.5	2.2		2.6	2.6	2.8	2.7	2.7	58.0	
60.0	2.1	1.9	2.1	1.5		1.9	2.2	1.8		2.3	2.2	2.5	2.4	2.4	60.0	
62.0						1.7	1.9	1.4		2.1	1.8	2.1	2.2	2.1	62.0	
64.0						1.5	1.6	1.1		1.9	1.5	1.8	2.0	1.8	64.0	
66.0										1.7	1.2	1.5	1.7	1.5	66.0	
68.0												1.2	1.4	1.2	68.0	
70.0															70.0	
Reeving	3					3					2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Table 1-30 Main boom + Tip boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range															
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)
	14.1★	18.7	18.7	18.7	18.7	18.7	18.7★	23.3	23.3	23.3	23.3	23.3	23.3	23.3★	
3.0															3.0
3.5	24														3.5
4.0	23.8		22	22	22	22	22.5								4.0
4.5	23.6	21.5	21.8	21.8	21.8	21.8	22.3								4.5
5.0	23.4	21.3	21.6	21.6	21.6	21.6	22.1		21	21.4	21.5	21.5	22.1	22.6	5.0
5.5	23.2	21.1	21.4	21.4	21.4	21.4	21.9	20.3	20.9	21.3	21.4	21.4	22	22.5	5.5
6.0	23	21	21.3	21.3	21.3	21.3	21.8	20.1	20.8	21.2	21.3	21.3	21.9	22.4	6.0
7.0	22	20.5	20.8	20.7	20.7	20.7	21.3	19.4	20.4	20.8	20.9	20.9	21.5	22	7.0
8.0	21.1	20	20.3	20.3	20.3	20.3	20.8	18.8	20	20.4	20.5	20.6	21.1	21.6	8.0
9.0	20.4	19.6	19.9	19.9	19.9	19.9	20.4	18.2	19.7	20.1	20.3	20.3	20.7	21.3	9.0
10.0	19.8	19.3	19.6	19.6	19.6	19.6	20.1	17.7	19.4	19.8	19.9	19.9	20.4	20.9	10.0
11.0	18.9	18.9	19.2	19.2	19.2	19.2	19.7	17.2	19.2	19.5	19.6	19.6	20.1	20.6	11.0
12.0	18	18.3	18.6	18.6	18.6	18.6	19.1	16.8	18.9	19.3	19.4	19.3	19.8	20.3	12.0
14.0	16.9	17.4	17.6	17.6	17.6	17.6	18.1	16	17.3	18.6	18.7	18.8	19.2	19.7	14.0
16.0		16.8	17	17	17	17	17.5	15	15.4	16.6	18	18	18.4	18.9	16.0
18.0		16.5	16.7	16.7	16.7	16.7	17.2	14.3	13.8	14.9	17.3	17.3	17.7	18.2	18.0
20.0								13.7	12.5	13.4	16.8	16.8	17.3	16.5	20.0
22.0								13.3	11.5	12.3	16.1	15.4	14.7	13.6	22.0
24.0															24.0
26.0															26.0
28.0															28.0
30.0															30.0
32.0															32.0
34.0															34.0
36.0															36.0
38.0															38.0
40.0															40.0
42.0															42.0
44.0															44.0
46.0															46.0
48.0															48.0
50.0															50.0
52.0															52.0
54.0															54.0
56.0															56.0
58.0															58.0
60.0															60.0
62.0															62.0
64.0															64.0
66.0															66.0
68.0															68.0
70.0															70.0
Reeving	4	4						4						Reeving	
Hook	25t														Hook
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	VII

Table 1-30 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range															
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★	
3.0															3.0
3.5															3.5
4.0															4.0
4.5															4.5
5.0															5.0
5.5				21.4	21.5	22.1	22.5								5.5
6.0	17.6	13.1	20.8	21.3	21.3	22	22.4								6.0
7.0	16.3	12	20.5	21	21	21.6	22.1	10.6	12.5	16.3	20.2	20.7	21.4	21.8	7.0
8.0	15.2	11.1	20.2	20.7	20.7	21.3	21.8	9.8	11.7	15.1	20	20.5	21.1	21.6	8.0
9.0	14.2	10.3	20	20.4	20.4	21	21.5	9.1	10.9	14.1	19.7	20.2	20.8	21.3	9.0
10.0	13.4	9.6	19.6	20.2	20.2	20.8	21.3	8.5	10.2	13.2	19.6	20.1	20.6	21.1	10.0
11.0	12.7	9	19.4	19.9	19.9	20.5	21	8	9.7	12.4	19.4	19.9	20.4	20.9	11.0
12.0	12.1	8.5	19	19.7	19.8	20.3	20.8	7.5	9.2	11.7	19.2	19.7	20.2	20.7	12.0
14.0	10.8	7.5	16.9	19	19.1	19.7	20.1	6.6	8.2	10.4	18.2	19.2	19.7	20.2	14.0
16.0	9.8	6.7	15.2	18.6	18.7	19.3	19.7	5.9	7.4	9.3	16.6	18.7	19.3	19.8	16.0
18.0	8.8	6	13.6	17.1	18	18.5	18.9	5.3	6.7	8.4	15.2	18.4	18.9	19.4	18.0
20.0	8	5.4	12.3	15.5	17.4	17.9	16.9	4.8	6.2	7.7	14	17.5	18.6	17.8	20.0
22.0	7.2	4.8	11.2	14.2	16.1	15.3	14	4.3	5.6	6.9	12.7	16	16	14.7	22.0
24.0	6.6	4.3	10.2	13	13.7	12.9	11.7	3.9	5.1	6.2	11.7	14.6	13.6	12.3	24.0
26.0	6	3.9	9.4	12.1	11.9	11	9.8	3.5	4.6	5.6	10.8	12.6	11.7	10.4	26.0
28.0								3.1	4.2	5.1	10	10.9	9.9	8.7	28.0
30.0								2.8	3.8	4.6	9.3	9.5	8.6	7.4	30.0
32.0															32.0
34.0															34.0
36.0															36.0
38.0															38.0
40.0															40.0
42.0															42.0
44.0															44.0
46.0															46.0
48.0															48.0
50.0															50.0
52.0															52.0
54.0															54.0
56.0															56.0
58.0															58.0
60.0															60.0
62.0															62.0
64.0															64.0
66.0															66.0
68.0															68.0
70.0															70.0
Reeving	4							4							Reeving
Hook	25t														Hook
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	1	1	VII

Table 1-30 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1★	41.7	41.7	41.7	41.7	41.7	41.7	41.7★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	10.2	12	15.5	19.7	19.9	20.9	21.5								8.0	
9.0	9.5	11.3	14.5	18.6	19.7	20.7	21.3	9.8	11.6	14.9	19	19.3	19.9	21	9.0	
10.0	9	10.7	13.6	17.4	19.5	20.5	21.1	9.3	11	14.1	17.9	19.2	19.8	20.9	10.0	
11.0	8.5	10.2	12.8	16.4	19.4	20.4	20.9	8.8	10.6	13.3	16.9	19.1	19.7	20.7	11.0	
12.0	8	9.7	12.1	15.5	19.3	20.3	20.8	8.4	10.1	12.6	16	18.9	19.6	20.6	12.0	
14.0	7.1	8.7	10.7	13.8	18.8	19.8	20.3	7.5	9.2	11.3	14.2	17.8	19.2	20.2	14.0	
16.0	6.4	7.9	9.6	12.4	17.7	19.4	19.9	6.9	8.4	10.2	12.8	16.1	18.8	19.8	16.0	
18.0	5.8	7.3	8.7	11.2	16.3	19	19.5	6.3	7.7	9.3	11.6	14.6	17.7	19.5	18.0	
20.0	5.3	6.7	7.9	10.3	15.1	18.7	18.1	5.8	7.2	8.6	10.6	13.4	16.5	18.7	20.0	
22.0	4.9	6.2	7.2	9.4	14.1	16.7	15.4	5.4	6.6	7.9	9.7	12.3	15.4	16	22.0	
24.0	4.5	5.7	6.6	8.6	13	14.4	13	5	6.1	7.3	8.9	11.3	14.5	13.8	24.0	
26.0	4.1	5.2	6	7.8	12	12.4	11.1	4.6	5.5	6.7	8.2	10.4	13.2	11.7	26.0	
28.0	3.7	4.7	5.4	7.1	11.2	10.7	9.4	4.2	5	6.1	7.5	9.5	11.4	10.1	28.0	
30.0	3.3	4.2	4.9	6.5	10.3	9.4	8.1	3.8	4.5	5.6	6.8	8.7	10	8.7	30.0	
32.0	3	3.8	4.5	5.9	9.1	8.1	6.8	3.5	4.1	5.1	6.2	8	8.8	7.5	32.0	
34.0	2.7	3.4	4.1	5.4	8	7	5.8	3.2	3.7	4.7	5.7	7.4	7.7	6.4	34.0	
36.0								2.9	3.4	4.3	5.2	6.8	6.8	5.6	36.0	
38.0								2.7	3.1	4	4.8	6.2	5.9	4.7	38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t 55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Description of Crane

Table 1-30 Main boom + Tip boom (continued)

Unit: Metric tons

Working radius (m)	Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range														Working radius (m)	
	Main boom (m) + Tip boom (m)															
	46.3	46.3	46.3	46.3	46.3	46.3	46.3★	50.9	50.9	50.9	50.9	50.9	50.9	50.9★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0	8.9	10.6	13.5	17.1	18.9	19.6	19.6								11.0	
12.0	8.5	10.2	12.9	16.3	18.6	19.5	19.5	8.6	10.3	13.1	17	18.1	19.2	19.4	12.0	
14.0	7.8	9.4	11.7	14.7	17.8	18.7	19.2	7.9	9.5	12	15.5	17.4	18.4	18.7	14.0	
16.0	7.1	8.6	10.7	13.3	16.4	16.8	18.7	7.2	8.8	11	14.2	15.8	17.7	18	16.0	
18.0	6.5	8	9.8	12.2	14.9	15.3	18.1	6.7	8.2	10.1	13	14.2	16.3	17.3	18.0	
20.0	6	7.4	9	11.2	13.6	13.9	17.5	6.2	7.7	9.4	12	12.9	15	16.8	20.0	
22.0	5.6	7	8.4	10.4	12.5	12.8	16.3	5.8	7.2	8.7	11.2	11.9	13.9	15.6	22.0	
24.0	5.2	6.6	7.8	9.6	11.5	11.8	14.2	5.4	6.8	8.2	10.5	11	12.9	13.4	24.0	
26.0	4.9	6.1	7.3	9	10.7	10.9	12.4	5.1	6.4	7.7	9.8	10.1	12	11.7	26.0	
28.0	4.6	5.6	6.8	8.4	9.9	10.1	10.9	4.8	6	7.2	9.2	9.3	10.4	10.2	28.0	
30.0	4.2	5.1	6.4	7.6	9	9.2	9.4	4.5	5.6	6.8	8.5	8.6	9.3	8.9	30.0	
32.0	3.9	4.7	5.9	7	8.2	8.4	8.2	4.3	5.3	6.4	7.9	7.9	8.1	7.8	32.0	
34.0	3.6	4.3	5.4	6.5	7.5	7.5	7.1	4.1	5	6.1	7.3	7.2	7.1	6.7	34.0	
36.0	3.3	3.9	4.9	6	6.7	6.5	6.2	3.9	4.6	5.7	6.7	6.6	6.1	5.8	36.0	
38.0	3	3.6	4.5	5.6	5.9	5.7	5.4	3.6	4.2	5.2	6.1	5.7	5.4	4.9	38.0	
40.0	2.7	3.3	4.1	5.2	5.2	5	4.7	3.3	3.9	4.8	5.4	5.1	4.6	4.2	40.0	
42.0	2.4	3	3.7	4.8	4.5	4.3	4	3	3.6	4.4	4.7	4.4	3.9	3.5	42.0	
44.0	2.2	2.8	3.4	4.2	3.9	3.7	3.5	2.7	3.3	4	4.1	3.8	3.3	3	44.0	
46.0								2.5	3	3.7	3.5	3.3	2.7	2.4	46.0	
48.0								2.3	2.7	3.4	3	2.7	2.3	1.9	48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	2	1	1	1	1	1	2	3	I	
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Table 1-30 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	55.5	55.5	55.5	55.5	55.5	55.5★					60.1	60.1	60.1	60.1		60.1★
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0																8.0
9.0																9.0
10.0																10.0
11.0																11.0
12.0																12.0
14.0	8.1	9.6	12.5	16	17.1	17.5										14.0
16.0	7.5	9	11.6	14.9	16.5	16.9				7.6	9.4	12	15.2	15.7		16.0
18.0	6.9	8.4	10.7	13.6	15.2	16.3				7.1	8.8	11.2	14.2	15.2		18.0
20.0	6.4	7.9	10	12.4	14	15.6				6.7	8.3	10.5	13.1	14.4		20.0
22.0	6	7.4	9.4	11.3	12.9	14.5				6.3	7.9	9.9	12.1	13.4		22.0
24.0	5.6	7	8.8	10.4	11.9	13.2				5.9	7.5	9.4	11.3	12.5		24.0
26.0	5.3	6.6	8.3	9.6	11	11.4				5.6	7.1	8.9	10.4	11.4		26.0
28.0	5	6.3	7.8	8.8	10.2	9.9				5.3	6.8	8.5	9.7	9.9		28.0
30.0	4.7	6	7.4	8.1	9.2	8.7				5	6.5	7.9	9	8.7		30.0
32.0	4.5	5.6	7	7.5	8	7.6				4.8	6.2	7.3	8.1	7.5		32.0
34.0	4.3	5.3	6.6	6.9	7	6.6				4.6	5.9	6.7	7.1	6.6		34.0
36.0	4.1	5	6.3	6.4	6.1	5.7				4.4	5.6	6.2	6.3	5.7		36.0
38.0	3.9	4.7	6	5.9	5.3	4.8				4.2	5.3	5.7	5.5	4.9		38.0
40.0	3.7	4.4	5.5	5.3	4.6	4.2				4	5	5.3	4.9	4.2		40.0
42.0	3.5	4.1	5	4.6	4	3.5				3.8	4.7	4.8	4.2	3.5		42.0
44.0	3.2	3.8	4.4	4	3.4	3				3.6	4.4	4.2	3.5	2.9		44.0
46.0	2.9	3.5	3.8	3.4	2.8	2.4				3.3	4.1	3.6	3	2.4		46.0
48.0	2.6	3.2	3.3	2.9	2.3	1.9				3.1	3.7	3.1	2.4	1.9		48.0
50.0	2.4	2.9	2.8	2.4	1.8	1.4				2.8	3.2	2.6	2	1.4		50.0
52.0	2.2	2.6	2.4	2	1.5	1.1				2.6	2.8	2.2	1.5	1		52.0
54.0										2.4	2.4	1.8	1.2			54.0
56.0										2.2	2	1.5				56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	4									3						Reeving
Hook	25t									25t						Hook
Telescoping mode	I	1	1	1	1	2	3			1	1	1	2	3	I	
	II	1	1	2	3	3	3			1	2	3	3	3	II	
	III	2	3	3	3	3	2			3	3	3	3	3	III	
	IV	3	3	3	3	2	2			3	3	3	3	2	IV	
	V	3	3	3	2	2	2			3	3	3	2	2	V	
	VI	3	3	2	2	2	2			3	3	2	2	2	VI	
	VII	3	2	2	2	2	2			3	2	2	2	2	VII	

Description of Crane

Table 1-30 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 42 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	64.7	64.7	64.7	64.7★		69.3	69.3	69.3★		73.9	73.9★	78.5★	82.7★	85.0★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0															11.0	
12.0															12.0	
14.0															14.0	
16.0															16.0	
18.0	7	8.6	10.9	13.3		7	8.6	10.5							18.0	
20.0	6.7	8.3	10.4	12.6		6.7	8.3	10.1		6.5	7.7	6.2			20.0	
22.0	6.4	8	10	11.9		6.4	8	9.7		6.3	7.5	6.1	5.2		22.0	
24.0	6.1	7.7	9.6	11.2		6.1	7.7	9.3		6.1	7.3	6	5.1	4.6	24.0	
26.0	5.8	7.4	9.2	10.5		5.9	7.4	8.9		5.9	7.1	5.9	5	4.5	26.0	
28.0	5.5	7.1	8.8	9.8		5.7	7.1	8.5		5.7	6.9	5.8	4.9	4.4	28.0	
30.0	5.3	6.8	8.4	8.7		5.5	6.9	8.1		5.5	6.7	5.7	4.8	4.3	30.0	
32.0	5.1	6.5	7.8	7.7		5.3	6.7	7.7		5.3	6.5	5.6	4.7	4.2	32.0	
34.0	4.9	6.2	7.2	6.6		5.1	6.5	6.8		5.1	6.3	5.4	4.6	4.1	34.0	
36.0	4.7	5.9	6.5	5.9		4.9	6.3	6.1		4.9	6.1	5.2	4.5	4	36.0	
38.0	4.5	5.5	5.7	5.1		4.7	6	5.4		4.8	5.4	5	4.4	3.9	38.0	
40.0	4.3	5.1	5	4.4		4.5	5.4	4.7		4.7	4.8	4.8	4.3	3.8	40.0	
42.0	4.1	4.8	4.4	3.7		4.3	4.8	4.1		4.6	4.3	4.6	4.2	3.7	42.0	
44.0	3.9	4.4	3.8	3.2		4.2	4.3	3.5		4.5	3.8	4.1	4	3.4	44.0	
46.0	3.7	4	3.3	2.6		3.9	3.7	2.9		4	3.3	3.6	3.5	3	46.0	
48.0	3.5	3.6	2.8	2.1		3.6	3.2	2.5		3.6	2.8	3.2	3.1	2.8	48.0	
50.0	3.3	3.1	2.3	1.6		3.3	2.7	2		3.2	2.4	2.8	2.8	2.5	50.0	
52.0	3.1	2.6	1.9	1.3		3	2.2	1.6		2.7	1.9	2.3	2.4	2.2	52.0	
54.0	2.8	2.2	1.6			2.6	1.8	1.2		2.3	1.5	1.9	2.1	1.9	54.0	
56.0	2.4	1.8	1.2			2.2	1.5			1.9	1.1	1.5	1.7	1.6	56.0	
58.0						1.8	1.1			1.6		1.2	1.3	1.2	58.0	
60.0										1.2			1		60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	3					3					2 2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Table 1-31 Main boom + Tip boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	14.1★	18.7	18.7	18.7	18.7	18.7	18.7★	23.3	23.3	23.3	23.3	23.3	23.3	23.3★		
3.0															3.0	
3.5	24														3.5	
4.0	23.8		22	22	22	22	22.5								4.0	
4.5	23.6	21.5	21.8	21.8	21.8	21.8	22.3								4.5	
5.0	23.4	21.3	21.6	21.6	21.6	21.6	22.1		21	21.4	21.5	21.5	22.1	22.6	5.0	
5.5	23.2	21.1	21.4	21.4	21.4	21.4	21.9	20.3	20.9	21.3	21.4	21.4	22	22.5	5.5	
6.0	23	21	21.3	21.3	21.3	21.3	21.8	20.1	20.8	21.2	21.3	21.3	21.9	22.4	6.0	
7.0	22	20.5	20.8	20.7	20.7	20.7	21.3	19.4	20.4	20.8	20.9	20.9	21.5	22	7.0	
8.0	21.1	20	20.3	20.3	20.3	20.3	20.8	18.8	20	20.4	20.5	20.6	21.1	21.6	8.0	
9.0	20.4	19.6	19.9	19.9	19.9	19.9	20.4	18.2	19.7	20.1	20.3	20.3	20.7	21.3	9.0	
10.0	19.8	19.3	19.6	19.6	19.6	19.6	20.1	17.7	19.4	19.8	19.9	19.9	20.4	20.9	10.0	
11.0	18.9	18.9	19.2	19.2	19.2	19.2	19.7	17.2	19.2	19.5	19.6	19.6	20.1	20.6	11.0	
12.0	18	18.3	18.6	18.6	18.6	18.6	19.1	16.8	18.9	19.3	19.4	19.3	19.8	20.3	12.0	
14.0	16.9	17.4	17.6	17.6	17.6	17.6	18.1	16	17.3	18.6	18.7	18.8	19.2	19.7	14.0	
16.0		16.8	17	17	17	17	17.5	15	15.4	16.6	18	18	18.4	18.9	16.0	
18.0		16.5	16.7	16.7	16.7	16.7	17.2	14.3	13.8	14.9	17.3	17.3	17.7	16.7	18.0	
20.0								13.7	12.5	13.4	16	15.2	14.5	13.5	20.0	
22.0								13.3	11.5	12.3	13.3	12.7	12	11	22.0	
24.0															24.0	
26.0															26.0	
28.0															28.0	
30.0															30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4	4						4						Reeving		
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	1	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	1	VII

Description of Crane

Table 1-31 Main boom + Tip boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5				21.4	21.5	22.1	22.5								5.5	
6.0	17.6	13.1	20.8	21.3	21.3	22	22.4								6.0	
7.0	16.3	12	20.5	21	21	21.6	22.1	10.6	12.5	16.3	20.2	20.7	21.4	21.8	7.0	
8.0	15.2	11.1	20.2	20.7	20.7	21.3	21.8	9.8	11.7	15.1	20	20.5	21.1	21.6	8.0	
9.0	14.2	10.3	20	20.4	20.4	21	21.5	9.1	10.9	14.1	19.7	20.2	20.8	21.3	9.0	
10.0	13.4	9.6	19.6	20.2	20.2	20.8	21.3	8.5	10.2	13.2	19.6	20.1	20.6	21.1	10.0	
11.0	12.7	9	19.4	19.9	19.9	20.5	21	8	9.7	12.4	19.4	19.9	20.4	20.9	11.0	
12.0	12.1	8.5	19	19.7	19.8	20.3	20.8	7.5	9.2	11.7	19.2	19.7	20.2	20.7	12.0	
14.0	10.8	7.5	16.9	19	19.1	19.7	20.1	6.6	8.2	10.4	18.2	19.2	19.7	20.2	14.0	
16.0	9.8	6.7	15.2	18.6	18.7	19.3	19.7	5.9	7.4	9.3	16.6	18.7	19.3	19.8	16.0	
18.0	8.8	6	13.6	17.1	18	18.5	17.1	5.3	6.7	8.4	15.2	18.4	18.9	17.6	18.0	
20.0	8	5.4	12.3	15.5	16	15.1	13.8	4.8	6.2	7.7	14	16.9	15.9	14.6	20.0	
22.0	7.2	4.8	11.2	14.2	13.4	12.5	11.3	4.3	5.6	6.9	12.7	14.2	13.1	11.9	22.0	
24.0	6.6	4.3	10.2	12	11.3	10.4	9.3	3.9	5.1	6.2	11.7	12.1	11	9.9	24.0	
26.0	6	3.9	9.4	10.3	9.6	8.7	7.5	3.5	4.6	5.6	10.8	10.4	9.4	8.1	26.0	
28.0								3.1	4.2	5.1	9.7	8.9	7.9	6.6	28.0	
30.0								2.8	3.8	4.6	8.4	7.7	6.7	5.4	30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	1	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	1	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	1	1	1	VII

Table 1-31 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	37.1	37.1	37.1	37.1	37.1	37.1	37.1 ★	41.7	41.7	41.7	41.7	41.7	41.7	41.7 ★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0	10.2	12	15.5	19.7	19.9	20.9	21.5								8.0	
9.0	9.5	11.3	14.5	18.6	19.7	20.7	21.3	9.8	11.6	14.9	19	19.3	19.9	21	9.0	
10.0	9	10.7	13.6	17.4	19.5	20.5	21.1	9.3	11	14.1	17.9	19.2	19.8	20.9	10.0	
11.0	8.5	10.2	12.8	16.4	19.4	20.4	20.9	8.8	10.6	13.3	16.9	19.1	19.7	20.7	11.0	
12.0	8	9.7	12.1	15.5	19.3	20.3	20.8	8.4	10.1	12.6	16	18.9	19.6	20.6	12.0	
14.0	7.1	8.7	10.7	13.8	18.8	19.8	20.3	7.5	9.2	11.3	14.2	17.8	19.2	20.2	14.0	
16.0	6.4	7.9	9.6	12.4	17.7	19.4	19.9	6.9	8.4	10.2	12.8	16.1	18.8	19.8	16.0	
18.0	5.8	7.3	8.7	11.2	16.3	19	17.9	6.3	7.7	9.3	11.6	14.6	17.7	18.4	18.0	
20.0	5.3	6.7	7.9	10.3	15.1	16.3	14.9	5.8	7.2	8.6	10.6	13.4	16.5	15.5	20.0	
22.0	4.9	6.2	7.2	9.4	14.1	13.9	12.6	5.4	6.6	7.9	9.7	12.3	14.4	13.1	22.0	
24.0	4.5	5.7	6.6	8.6	12.9	11.9	10.5	5	6.1	7.3	8.9	11.3	12.4	11.2	24.0	
26.0	4.1	5.2	6	7.8	11.1	10.1	8.7	4.6	5.5	6.7	8.2	10.4	10.8	9.4	26.0	
28.0	3.7	4.7	5.4	7.1	9.6	8.6	7.3	4.2	5	6.1	7.5	9.5	9.3	8	28.0	
30.0	3.3	4.2	4.9	6.5	8.3	7.4	6.1	3.8	4.5	5.6	6.8	8.2	8.1	6.7	30.0	
32.0	3	3.8	4.5	5.9	7.3	6.3	5.1	3.5	4.1	5.1	6.2	7.2	6.9	5.7	32.0	
34.0	2.7	3.4	4.1	5.4	6.3	5.3	4.1	3.2	3.7	4.7	5.7	6.2	6	4.7	34.0	
36.0									2.9	3.4	4.3	5.2	5.4	5.2	4	36.0
38.0									2.7	3.1	4	4.8	4.7	4.4	3.2	38.0
40.0																40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	4							4							Reeving	
Hook	25t 55t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	1	VII

Description of Crane

Table 1-31 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3★	50.9	50.9	50.9	50.9	50.9	50.9	50.9★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0	8.9	10.6	13.5	17.1	18.9	19.6	19.6								11.0	
12.0	8.5	10.2	12.9	16.3	18.6	19.5	19.5	8.6	10.3	13.1	17	18.1	19.2	19.4	12.0	
14.0	7.8	9.4	11.7	14.7	17.8	18.7	19.2	7.9	9.5	12	15.5	17.4	18.4	18.7	14.0	
16.0	7.1	8.6	10.7	13.3	16.4	16.8	18.7	7.2	8.8	11	14.2	15.8	17.7	18	16.0	
18.0	6.5	8	9.8	12.2	14.9	15.3	18.1	6.7	8.2	10.1	13	14.2	16.3	17.3	18.0	
20.0	6	7.4	9	11.2	13.6	13.9	15.8	6.2	7.7	9.4	12	12.9	15	15.1	20.0	
22.0	5.6	7	8.4	10.4	12.5	12.8	13.5	5.8	7.2	8.7	11.2	11.9	13.1	12.8	22.0	
24.0	5.2	6.6	7.8	9.6	11.5	11.8	11.6	5.4	6.8	8.2	10.5	11	11.3	10.9	24.0	
26.0	4.9	6.1	7.3	9	10.7	10.4	10.1	5.1	6.4	7.7	9.8	10.1	9.7	9.4	26.0	
28.0	4.6	5.6	6.8	8.4	9.3	9.1	8.7	4.8	6	7.2	9.2	8.9	8.3	8	28.0	
30.0	4.2	5.1	6.4	7.6	8	7.8	7.4	4.5	5.6	6.8	8.1	7.8	7.2	6.9	30.0	
32.0	3.9	4.7	5.9	7	6.8	6.7	6.3	4.3	5.3	6.4	7.2	6.7	6.2	5.9	32.0	
34.0	3.6	4.3	5.4	6.4	5.9	5.7	5.4	4.1	5	6.1	6.3	5.7	5.3	4.9	34.0	
36.0	3.3	3.9	4.9	5.5	5.1	4.9	4.5	3.9	4.6	5.7	5.4	5	4.5	4.1	36.0	
38.0	3	3.6	4.5	4.8	4.4	4.2	3.9	3.6	4.2	5.2	4.6	4.2	3.7	3.4	38.0	
40.0	2.7	3.3	4.1	4.1	3.8	3.6	3.2	3.3	3.9	24	3.9	3.6	3	2.7	40.0	
42.0	2.4	3	3.7	3.5	3.2	3	2.7	3	3.6	18	3.3	3	2.4	2.2	42.0	
44.0	2.2	2.8	3.3	3	2.6	2.4	2.1	2.7	3.3	14	2.8	2.4	2	1.6	44.0	
46.0								2.5	3	10.5	2.3	2	1.5	1.2	46.0	
48.0								2.3	2.7	7.8	1.9	1.6	1.1		48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	2	3	3	3	3	2	2	IV
	V	3	3	3	2	2	2	2	2	3	3	3	2	2	2	V
	VI	3	3	2	2	2	2	2	2	3	3	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	2	3	2	2	2	2	2	VII

Table 1-31 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	55.5	55.5	55.5	55.5	55.5	55.5★					60.1	60.1	60.1	60.1		60.1★
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0																8.0
9.0																9.0
10.0																10.0
11.0																11.0
12.0																12.0
14.0	8.1	9.6	12.5	16	17.1	17.5										14.0
16.0	7.5	9	11.6	14.9	16.5	16.9				7.6	9.4	12	15.2	15.7		16.0
18.0	6.9	8.4	10.7	13.6	15.2	16.3				7.1	8.8	11.2	14.2	15.2		18.0
20.0	6.4	7.9	10	12.4	14	14.8				6.7	8.3	10.5	13.1	14.4		20.0
22.0	6	7.4	9.4	11.3	12.9	12.5				6.3	7.9	9.9	12.1	12.6		22.0
24.0	5.6	7	8.8	10.4	11.1	10.7				5.9	7.5	9.4	11.3	10.7		24.0
26.0	5.3	6.6	8.3	9.6	9.6	9.1				5.6	7.1	8.9	9.7	9.1		26.0
28.0	5	6.3	7.8	8.8	8.2	7.8				5.3	6.8	8.5	8.4	7.8		28.0
30.0	4.7	6	7.4	7.8	7.1	6.7				5	6.5	7.9	7.3	6.7		30.0
32.0	4.5	5.6	7	6.8	6.2	5.6				4.8	6.2	7.1	6.2	5.7		32.0
34.0	4.3	5.3	6.4	5.9	5.3	4.8				4.6	5.9	6.2	5.3	4.8		34.0
36.0	4.1	5	5.6	5.2	4.5	3.9				4.4	5.6	5.4	4.7	4		36.0
38.0	3.9	4.7	4.9	4.4	3.8	3.3				4.2	5.3	4.7	3.9	3.3		38.0
40.0	3.7	4.4	4.2	3.7	3.1	2.6				4	4.6	4.1	3.3	2.6		40.0
42.0	3.5	4.1	3.6	3.1	2.5	2.1				3.8	4.1	3.4	2.7	2		42.0
44.0	3.2	3.6	3.1	2.7	2	1.5				3.6	3.5	2.8	2.1	1.6		44.0
46.0	2.9	3.1	2.6	2.2	1.6	1				3.3	3	2.4	1.6	1.1		46.0
48.0	2.6	2.6	2.1	1.7	1.1					3.1	2.5	1.9	1.3			48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	4									3						Reeving
Hook	25t									25t						Hook
Telescoping mode	I	1	1	1	1	2	3			1	1	1	2	3	I	
	II	1	1	2	3	3	3			1	2	3	3	3	II	
	III	2	3	3	3	3	2			3	3	3	3	3	III	
	IV	3	3	3	3	2	2			3	3	3	3	2	IV	
	V	3	3	3	2	2	2			3	3	3	2	2	V	
	VI	3	3	2	2	2	2			3	3	2	2	2	VI	
	VII	3	2	2	2	2	2			3	2	2	2	2	VII	

Table 1-31 Main boom + Tip boom (continued)

Unit: Metric tons

Working radius (m)	Outriggers fully extended (8.3 m), with 32 tons counterweight, over full range														Working radius (m)	
	Main boom (m) + Tip boom (m)															
	64.7	64.7	64.7	64.7★		69.3	69.3	69.3★		73.9	73.9★	78.5★	82.7★	85.0★		
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0																8.0
9.0																9.0
10.0																10.0
11.0																11.0
12.0																12.0
14.0																14.0
16.0																16.0
18.0	7	8.6	10.9	13.3		7	8.6	10.5								18.0
20.0	6.7	8.3	10.4	12.6		6.7	8.3	10.1		6.5	7.7	6.2				20.0
22.0	6.4	8	10	11.9		6.4	8	9.7		6.3	7.5	6.1	5.2			22.0
24.0	6.1	7.7	9.6	11.2		6.1	7.7	9.3		6.1	7.3	6	5.1	4.6		24.0
26.0	5.8	7.4	9.2	9.1		5.9	7.4	8.9		5.9	7.1	5.9	5	4.5		26.0
28.0	5.5	7.1	8.6	7.9		5.7	7.1	7.7		5.7	6.9	5.8	4.9	4.4		28.0
30.0	5.3	6.8	7.5	6.8		5.5	6.9	6.6		5.5	6.7	5.7	4.8	4.3		30.0
32.0	5.1	6.5	6.5	5.8		5.3	6.6	5.9		5.3	6	5.6	4.7	4.2		32.0
34.0	4.9	6.2	5.5	4.9		5.1	5.8	5.1		5.1	5.2	5.4	4.6	4.1		34.0
36.0	4.7	5.6	4.9	4.1		4.9	5.1	4.4		4.9	4.4	4.9	4.5	4		36.0
38.0	4.5	4.9	4.1	3.4		4.7	4.5	3.7		4.6	3.9	4.2	4.1	3.5		38.0
40.0	4.3	4.3	3.6	2.8		4.5	3.8	3.1		4.1	3.3	3.7	3.6	3.1		40.0
42.0	4.1	3.8	2.9	2.3		3.9	3.3	2.6		3.6	2.8	3.1	3.1	2.6		42.0
44.0	3.9	3.2	2.5	1.8		3.5	2.8	2		3.2	2.3	2.6	2.6	2.2		44.0
46.0	3.3	2.7	2	1.3		3.1	2.3	1.5		2.6	1.9	2.2	2.3	1.9		46.0
48.0	2.8	2.3	1.5			2.6	1.9	1.2		2.3	1.5	1.8	1.9	1.6		48.0
50.0						2.2	1.4			1.8	1.1	1.4	1.5	1.3		50.0
52.0										1.5		1.1	1.2	1.1		52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	3					3					2 2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

Table 1-32 Main boom + Tip boom

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range															
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)
	14.1★	18.7	18.7	18.7	18.7	18.7	18.7★	23.3	23.3	23.3	23.3	23.3	23.3	23.3★	
3.0															3.0
3.5	24														3.5
4.0	23.8		22	22	22	22	22.5								4.0
4.5	23.6	21.5	21.8	21.8	21.8	21.8	22.3								4.5
5.0	23.4	21.3	21.6	21.6	21.6	21.6	22.1		21	21.4	21.5	21.5	22.1	22.6	5.0
5.5	23.2	21.1	21.4	21.4	21.4	21.4	21.9	20.3	20.9	21.3	21.4	21.4	22	22.5	5.5
6.0	23	21	21.3	21.3	21.3	21.3	21.8	20.1	20.8	21.2	21.3	21.3	21.9	22.4	6.0
7.0	22	20.5	20.8	20.7	20.7	20.7	21.3	19.4	20.4	20.8	20.9	20.9	21.5	22	7.0
8.0	21.1	20	20.3	20.3	20.3	20.3	20.8	18.8	20	20.4	20.5	20.6	21.1	21.6	8.0
9.0	20.4	19.6	19.9	19.9	19.9	19.9	20.4	18.2	19.7	20.1	20.3	20.3	20.7	21.3	9.0
10.0	19.8	19.3	19.6	19.6	19.6	19.6	20.1	17.7	19.4	19.8	19.9	19.9	20.4	20.9	10.0
11.0	18.9	18.9	19.2	19.2	19.2	19.2	19.7	17.2	19.2	19.5	19.6	19.6	20.1	20.6	11.0
12.0	18	18.3	18.6	18.6	18.6	18.6	19.1	16.8	18.9	19.3	19.4	19.3	19.8	20.3	12.0
14.0	16.9	17.4	17.6	17.6	17.6	17.6	18.1	16	17.3	18.6	18.7	18.8	19.2	19.7	14.0
16.0		16.8	17	17	17	17	17.5	15	15.4	16.6	18	18	18	16.9	16.0
18.0		15.8	15.6	15.2	14.9	14.4	13.9	14.3	13.8	14.9	15.8	15	14.2	13.1	18.0
20.0								13.7	12.5	13.4	12.8	12.1	11.4	10.2	20.0
22.0								11.9	11.5	11.1	10.5	9.8	9.1	8	22.0
24.0															24.0
26.0															26.0
28.0															28.0
30.0															30.0
32.0															32.0
34.0															34.0
36.0															36.0
38.0															38.0
40.0															40.0
42.0															42.0
44.0															44.0
46.0															46.0
48.0															48.0
50.0															50.0
52.0															52.0
54.0															54.0
56.0															56.0
58.0															58.0
60.0															60.0
62.0															62.0
64.0															64.0
66.0															66.0
68.0															68.0
70.0															70.0
Reeving	4	4						4						Reeving	
Hook	25t														Hook
Telescoping mode	I	1	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	1	2	1	1	1	1	1	2	II
	III	1	1	1	1	1	2	1	1	1	1	1	2	2	III
	IV	1	1	1	1	2	1	1	1	1	1	2	2	1	IV
	V	1	1	1	2	1	1	1	1	1	2	2	1	1	V
	VI	1	1	2	1	1	1	1	1	2	2	1	1	1	VI
	VII	1	2	1	1	1	1	1	3	2	1	1	1	1	VII

Description of Crane

Table 1-32 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	27.9	27.9	27.9	27.9	27.9	27.9	27.9★	32.5	32.5	32.5	32.5	32.5	32.5	32.5★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5				21.4	21.5	22.1	22.5								5.5	
6.0	17.6	13.1	20.8	21.3	21.3	22	22.4								6.0	
7.0	16.3	12	20.5	21	21	21.6	22.1	10.6	12.5	16.3	20.2	20.7	21.4	21.8	7.0	
8.0	15.2	11.1	20.2	20.7	20.7	21.3	21.8	9.8	11.7	15.1	20	20.5	21.1	21.6	8.0	
9.0	14.2	10.3	20	20.4	20.4	21	21.5	9.1	10.9	14.1	19.7	20.2	20.8	21.3	9.0	
10.0	13.4	9.6	19.6	20.2	20.2	20.8	21.3	8.5	10.2	13.2	19.6	20.1	20.6	21.1	10.0	
11.0	12.7	9	19.4	19.9	19.9	20.5	21	8	9.7	12.4	19.4	19.9	20.4	20.9	11.0	
12.0	12.1	8.5	19	19.7	19.8	20.3	20.8	7.5	9.2	11.7	19.2	19.7	20.2	20.7	12.0	
14.0	10.8	7.5	16.9	19	19.1	19.7	20.1	6.6	8.2	10.4	18.2	19.2	19.7	20.2	14.0	
16.0	9.8	6.7	15.2	18.6	18.7	18.6	17.3	5.9	7.4	9.3	16.6	18.7	18.8	17.4	16.0	
18.0	8.8	6	13.6	16.7	15.8	14.8	13.5	5.3	6.7	8.4	15.2	16.3	15.3	14	18.0	
20.0	8	5.4	12.3	13.6	12.8	11.9	10.5	4.8	6.2	7.7	14	13.7	12.7	11.3	20.0	
22.0	7.2	4.8	11.2	11.4	10.5	9.6	8.3	4.3	5.6	6.9	12.1	11.2	10.2	8.9	22.0	
24.0	6.6	4.3	10.2	9.4	8.6	7.7	6.5	3.9	5.1	6.2	10.4	9.4	8.4	7	24.0	
26.0	6	3.9	8.6	7.9	7.2	6.3	5	3.5	4.6	5.6	8.7	7.9	6.9	5.6	26.0	
28.0								3.1	4.2	5.1	7.5	6.6	5.7	4.3	28.0	
30.0								2.8	3.8	4.6	6.3	5.5	4.5	3.3	30.0	
32.0															32.0	
34.0															34.0	
36.0															36.0	
38.0															38.0	
40.0															40.0	
42.0															42.0	
44.0															44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	2	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	2	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	2	1	1	1	2	2	2	III
	IV	1	1	1	2	2	2	2	1	1	1	2	2	2	2	IV
	V	1	1	2	2	2	1	1	1	2	3	2	2	2	1	V
	VI	2	3	2	2	1	1	1	3	3	2	2	2	1	1	VI
	VII	3	2	2	1	1	1	1	3	2	2	2	1	1	1	VII

Table 1-32 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range															
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)
	37.1	37.1	37.1	37.1	37.1	37.1	37.1 ★	41.7	41.7	41.7	41.7	41.7	41.7	41.7 ★	
3.0															3.0
3.5															3.5
4.0															4.0
4.5															4.5
5.0															5.0
5.5															5.5
6.0															6.0
7.0															7.0
8.0	10.2	12	15.5	19.7	19.9	20.9	21.5								8.0
9.0	9.5	11.3	14.5	18.6	19.7	20.7	21.3	9.8	11.6	14.9	19	19.3	19.9	21	9.0
10.0	9	10.7	13.6	17.4	19.5	20.5	21.1	9.3	11	14.1	17.9	19.2	19.8	20.9	10.0
11.0	8.5	10.2	12.8	16.4	19.4	20.4	20.9	8.8	10.6	13.3	16.9	19.1	19.7	20.7	11.0
12.0	8	9.7	12.1	15.5	19.3	20.3	20.8	8.4	10.1	12.6	16	18.9	19.6	20.6	12.0
14.0	7.1	8.7	10.7	13.8	18.8	19.8	20.3	7.5	9.2	11.3	14.2	17.8	19.2	20.2	14.0
16.0	6.4	7.9	9.6	12.4	17.7	19.4	17.7	6.9	8.4	10.2	12.8	16.1	18.8	18.2	16.0
18.0	5.8	7.3	8.7	11.2	16.3	15.8	14.4	6.3	7.7	9.3	11.6	14.6	16.2	14.9	18.0
20.0	5.3	6.7	7.9	10.3	14.2	13.1	11.7	5.8	7.2	8.6	10.6	13.4	13.7	12.3	20.0
22.0	4.9	6.2	7.2	9.4	12	11	9.6	5.4	6.6	7.9	9.7	11.8	11.5	10.1	22.0
24.0	4.5	5.7	6.6	8.6	10.2	9.1	7.7	5	6.1	7.3	8.9	10	9.7	8.4	24.0
26.0	4.1	5.2	6	7.8	8.6	7.5	6.3	4.6	5.5	6.7	8.2	8.6	8.3	6.9	26.0
28.0	3.7	4.7	5.4	7.1	7.3	6.3	5	4.2	5	6.1	7.5	7.2	6.9	5.6	28.0
30.0	3.3	4.2	4.9	6.5	6.3	5.3	3.9	3.8	4.5	5.6	6.3	6.1	5.9	4.6	30.0
32.0	3	3.8	4.5	5.5	5.3	4.4	3.1	3.5	4.1	5.1	5.3	5.2	4.9	3.7	32.0
34.0	2.7	3.4	4.1	4.7	4.5	3.5	2.3	3.2	3.7	4.7	4.6	4.4	4.2	2.9	34.0
36.0								2.9	3.4	4.2	3.8	3.7	3.4	2.2	36.0
38.0								2.7	3.1	3.6	3.3	3	2.9	1.6	38.0
40.0															40.0
42.0															42.0
44.0															44.0
46.0															46.0
48.0															48.0
50.0															50.0
52.0															52.0
54.0															54.0
56.0															56.0
58.0															58.0
60.0															60.0
62.0															62.0
64.0															64.0
66.0															66.0
68.0															68.0
70.0															70.0
Reeving	4							4							Reeving
Hook	25t 55t														Hook
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	2	1	1	1	1	2	2	II
	III	1	1	1	1	2	2	2	1	1	1	2	3	2	III
	IV	1	1	2	3	2	2	2	1	2	3	3	2	2	IV
	V	2	3	3	2	2	2	2	3	3	3	2	2	2	V
	VI	3	3	2	2	2	2	1	3	3	2	2	2	2	VI
	VII	3	2	2	2	2	1	1	3	2	2	2	2	2	VII

Description of Crane

Table 1-32 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	46.3	46.3	46.3	46.3	46.3	46.3	46.3★	50.9	50.9	50.9	50.9	50.9	50.9	50.9★		
3.0															3.0	
3.5															3.5	
4.0															4.0	
4.5															4.5	
5.0															5.0	
5.5															5.5	
6.0															6.0	
7.0															7.0	
8.0															8.0	
9.0															9.0	
10.0															10.0	
11.0	8.9	10.6	13.5	17.1	18.9	19.6	19.6								11.0	
12.0	8.5	10.2	12.9	16.3	18.6	19.5	19.5	8.6	10.3	13.1	17	18.1	19.2	19.4	12.0	
14.0	7.8	9.4	11.7	14.7	17.8	18.7	19.2	7.9	9.5	12	15.5	17.4	18.4	18.7	14.0	
16.0	7.1	8.6	10.7	13.3	16.4	16.8	18.5	7.2	8.8	11	14.2	15.8	17.7	18	16.0	
18.0	6.5	8	9.8	12.2	14.9	15.3	15.3	6.7	8.2	10.1	13	14.2	14.9	14.6	18.0	
20.0	6	7.4	9	11.2	13.3	13	12.7	6.2	7.7	9.4	12	12.8	12.2	11.9	20.0	
22.0	5.6	7	8.4	10.4	11.2	10.9	10.6	5.8	7.2	8.7	11.2	10.8	10.3	9.9	22.0	
24.0	5.2	6.6	7.8	9.6	9.5	9.2	8.9	5.4	6.8	8.2	9.5	9.2	8.6	8.2	24.0	
26.0	4.9	6.1	7.3	8.7	8.2	7.9	7.5	5.1	6.4	7.7	8.1	7.8	7.2	6.8	26.0	
28.0	4.6	5.6	6.8	7.4	6.9	6.7	6.3	4.8	6	7.2	6.9	6.6	6	5.6	28.0	
30.0	4.2	5.1	6.4	6.2	5.8	5.7	5.2	4.5	5.6	6.5	5.9	5.6	5	4.7	30.0	
32.0	3.9	4.7	5.8	5.3	4.8	4.7	4.3	4.3	5.3	5.6	5	4.7	4.1	3.8	32.0	
34.0	3.6	4.3	4.9	4.5	4.1	3.8	3.5	4.1	5	4.8	4.3	3.9	3.4	3	34.0	
36.0	3.3	3.9	4.2	3.8	3.3	3.2	2.8	3.9	4.6	4.2	3.6	3.2	2.6	2.3	36.0	
38.0	3	3.6	3.5	3.2	2.8	2.5	2.2	3.6	3.9	3.4	3	2.6	2.1	1.7	38.0	
40.0	2.7	3.3	2.9	2.6	2.2	2.1	1.7	3.3	3.3	2.8	2.4	2	1.5	1.1	40.0	
42.0	2.4	2.8	2.4	2.1	1.8	1.5	1.2	3	2.8	2.4	1.8	1.6	1		42.0	
44.0	2.2	2.4	2	1.7	1.3	1.2									44.0	
46.0															46.0	
48.0															48.0	
50.0															50.0	
52.0															52.0	
54.0															54.0	
56.0															56.0	
58.0															58.0	
60.0															60.0	
62.0															62.0	
64.0															64.0	
66.0															66.0	
68.0															68.0	
70.0															70.0	
Reeving	4							4							Reeving	
Hook	25t														Hook	
Telescoping mode	I	1	1	1	1	1	1	2	1	1	1	1	1	2	3	I
	II	1	1	1	1	2	3	2	1	1	1	2	3	3	2	II
	III	1	1	2	3	3	2	2	1	2	3	3	3	2	2	III
	IV	2	3	3	3	2	2	2	3	3	3	3	2	2	2	IV
	V	3	3	3	2	2	2	2	3	3	3	2	2	2	2	V
	VI	3	3	2	2	2	2	2	3	3	2	2	2	2	2	VI
	VII	3	2	2	2	2	2	2	3	2	2	2	2	2	2	VII

Table 1-32 Main boom + Tip boom (continued)

Unit: Metric tons

Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range																
Working radius (m)	Main boom (m) + Tip boom (m)														Working radius (m)	
	55.5	55.5	55.5	55.5	55.5	55.5★					60.1	60.1	60.1	60.1		60.1★
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0																8.0
9.0																9.0
10.0																10.0
11.0																11.0
12.0																12.0
14.0	8.1	9.6	12.5	16	17.1	17.5										14.0
16.0	7.5	9	11.6	14.9	16.5	16.9				7.6	9.4	12	15.2	15.7		16.0
18.0	6.9	8.4	10.7	13.6	14.8	14.4				7.1	8.8	11.2	14.2	14.3		18.0
20.0	6.4	7.9	10	12.4	12.2	11.7				6.7	8.3	10.5	12.3	11.8		20.0
22.0	6	7.4	9.4	10.8	10.1	9.9				6.3	7.9	9.9	10.3	9.6		22.0
24.0	5.6	7	8.8	9.2	8.5	7.9				5.9	7.5	9.4	8.6	8		24.0
26.0	5.3	6.6	8.3	7.8	7.1	6.6				5.6	7.1	8	7.2	6.6		26.0
28.0	5	6.3	7	6.7	5.9	5.5				5.3	6.8	6.9	6.1	5.4		28.0
30.0	4.7	6	6.1	5.6	5	4.4				5	6.4	5.8	5.1	4.5		30.0
32.0	4.5	5.6	5.2	4.7	4.1	3.6				4.8	5.5	5	4.2	3.6		32.0
34.0	4.3	5.1	4.4	4	3.4	2.8				4.6	4.8	4.2	3.4	2.9		34.0
36.0	4.1	4.4	3.8	3.3	2.6	2.2				4.4	4.1	3.5	2.8	2.2		36.0
38.0	3.9	3.7	3.2	2.8	2.1	1.5				4.2	3.5	2.9	2.2	1.6		38.0
40.0	3.7	3.3	2.6	2.1	1.5	1.1				3.6	3	2.4	1.6	1.1		40.0
42.0																42.0
44.0																44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	4									3					Reeving	
Hook	25t									25t					Hook	
Telescoping mode	I	1	1	1	1	2	3			1	1	1	2	3	I	
	II	1	1	2	3	3	3			1	2	3	3	3	II	
	III	2	3	3	3	3	2			3	3	3	3	3	III	
	IV	3	3	3	3	2	2			3	3	3	3	2	IV	
	V	3	3	3	2	2	2			3	3	3	2	2	V	
	VI	3	3	2	2	2	2			3	3	2	2	2	VI	
	VII	3	2	2	2	2	2			3	2	2	2	2	VII	

Description of Crane

Table 1-32 Main boom + Tip boom (continued)

Unit: Metric tons

Working radius (m)	Outriggers fully extended (8.3 m), with 22 tons counterweight, over full range														Working radius (m)	
	Main boom (m) + Tip boom (m)															
	64.7	64.7	64.7	64.7★		69.3	69.3	69.3★		73.9	73.9★	78.5★	82.7★	85.0★		
3.0																3.0
3.5																3.5
4.0																4.0
4.5																4.5
5.0																5.0
5.5																5.5
6.0																6.0
7.0																7.0
8.0																8.0
9.0																9.0
10.0																10.0
11.0																11.0
12.0																12.0
14.0																14.0
16.0																16.0
18.0	7	8.6	10.9	13.3		7	8.6	10.5								18.0
20.0	6.7	8.3	10.4	12.1		6.7	8.3	10.1		6.5	7.7	6.2				20.0
22.0	6.4	8	10	10.2		6.4	8	9.4		6.3	7.5	6.1	5.2			22.0
24.0	6.1	7.7	8.7	7.9		6.1	7.7	7.9		6.1	7.3	6	5.1	4.6		24.0
26.0	5.8	7.4	7.3	6.6		5.9	7.4	6.6		5.9	6.7	5.9	5	4.5		26.0
28.0	5.5	7.1	6.2	5.6		5.7	6.3	5.5		5.7	5.7	5.8	4.9	4.4		28.0
30.0	5.3	6.1	5.3	4.6		5.5	5.4	4.5		5.5	4.8	5.2	4.8	4.3		30.0
32.0	5.1	5.2	4.5	3.7		5.3	4.6	3.8		4.8	4	4.5	4.1	3.6		32.0
34.0	4.9	4.4	3.7	3		4.7	3.9	3.2		4	3.4	3.8	3.6	3.1		34.0
36.0	4.4	3.8	3	2.3		4.1	3.3	2.6		3.5	2.7	3.1	3.1	2.6		36.0
38.0	3.8	3.3	2.4	1.8		3.5	2.7	2		3	2.2	2.5	2.5	2.1		38.0
40.0	3.3	2.7	1.9	1.2		3	2.2	1.4		2.5	1.7	2	2.1	1.7		40.0
42.0	2.8	2.2	1.4	1		2.5	1.7	1		2	1.3	1.6	1.7	1.3		42.0
44.0										1.6		1.2	1.3	1		44.0
46.0																46.0
48.0																48.0
50.0																50.0
52.0																52.0
54.0																54.0
56.0																56.0
58.0																58.0
60.0																60.0
62.0																62.0
64.0																64.0
66.0																66.0
68.0																68.0
70.0																70.0
Reeving	3					3					2		2	2	2	Reeving
Hook	25t														Hook	
Telescoping mode	I	1	1	2	3		1	2	3		2	3	3	3	4	I
	II	2	3	3	3		3	3	3		3	3	3	3	4	II
	III	3	3	3	3		3	3	3		3	3	3	4	4	III
	IV	3	3	3	3		3	3	3		3	3	3	4	4	IV
	V	3	3	3	2		3	3	3		3	3	3	4	4	V
	VI	3	3	2	2		3	3	2		3	3	3	4	4	VI
	VII	3	2	2	2		3	2	2		3	2	3	4	4	VII

1.3.15 Lifting height charts

1.3.15.1 Main boom

Refer to Figure 1-15.

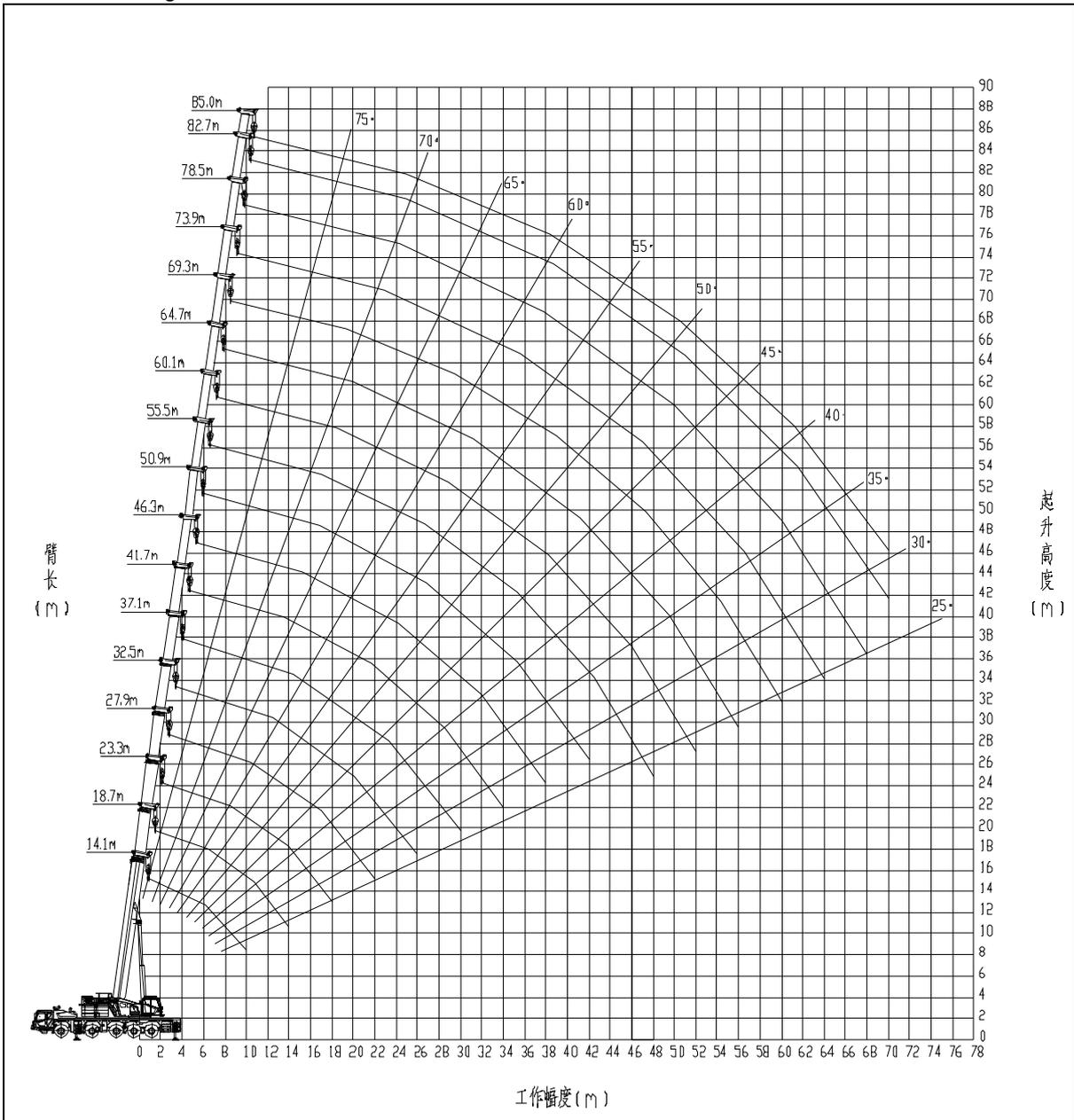


Figure 1-15 Main boom

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

1.3.15.2 Main boom + jib

1.3.15.2.1 Main boom + jib variant 1 (10.4 m)

- a) For the lifting height chart for 73.9 m main boom + jib variant 1 (10.4 m), refer to Figure 1-16.

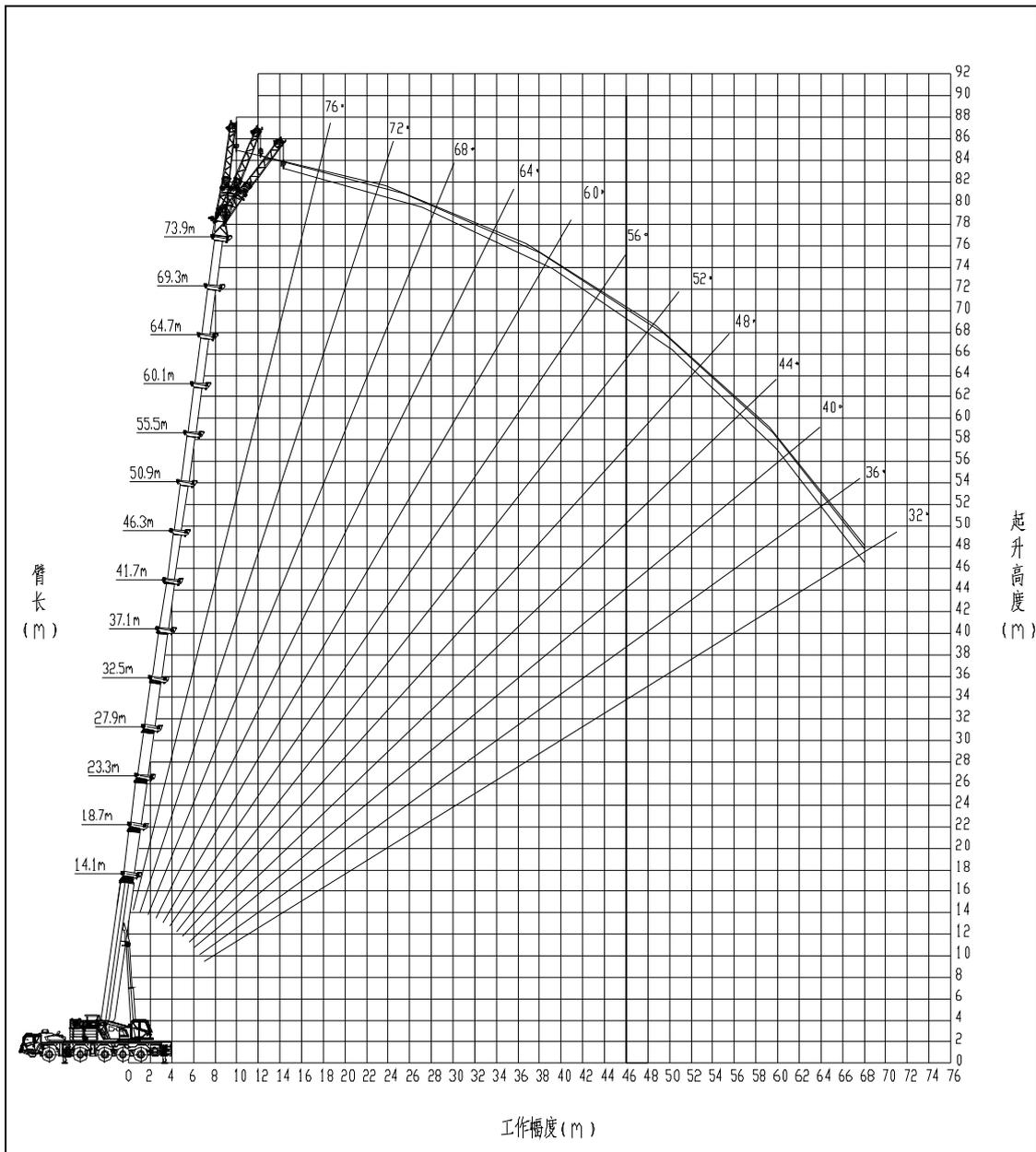


Figure 1-16 73.9 m main boom + jib variant 1 (10.4 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

b) For the lifting height chart for 78.5 m main boom + jib variant 1 (10.4 m), refer to Figure 1-17.

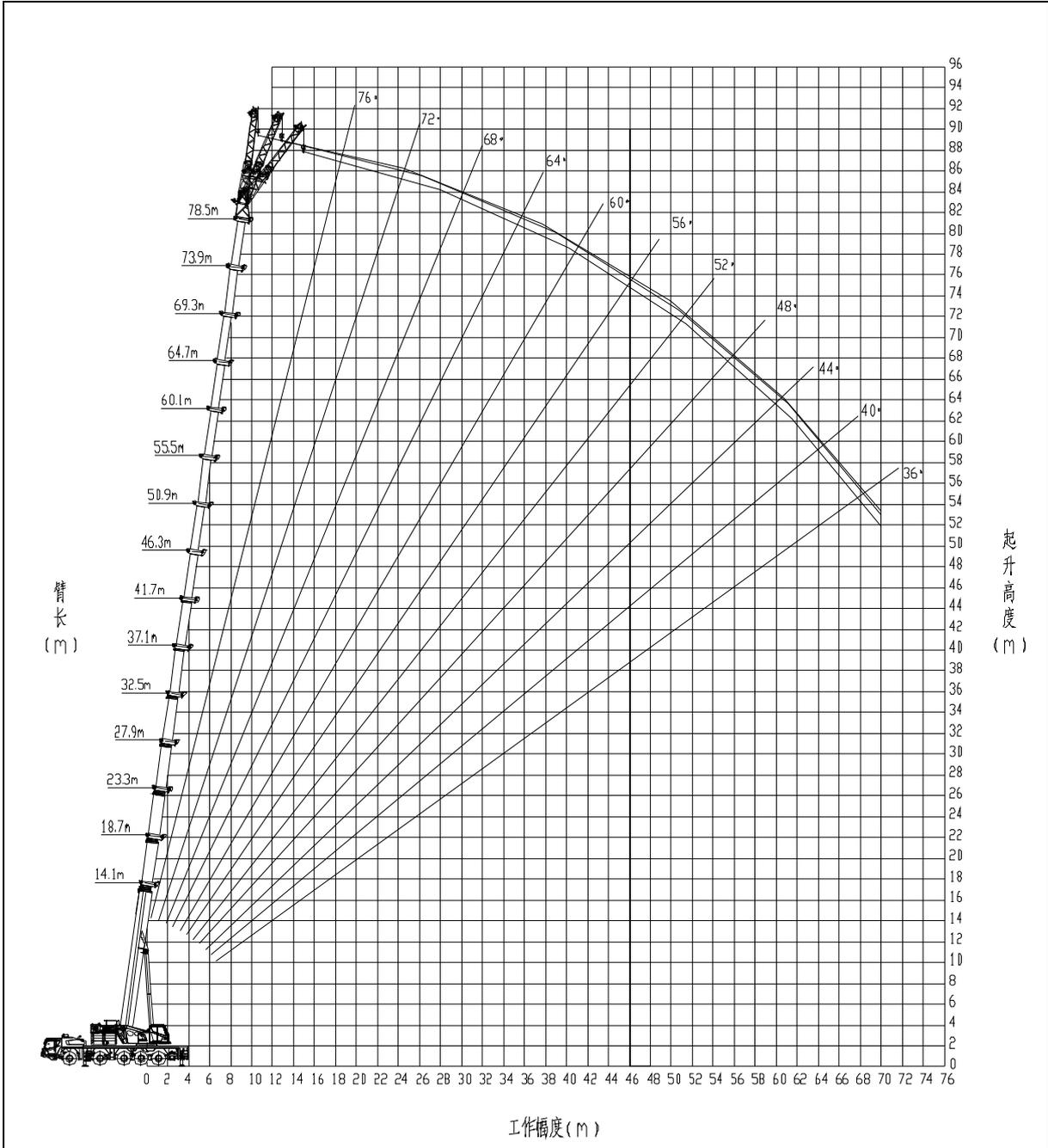


Figure 1-17 78.5 m main boom + jib variant 1 (10.4 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

1.3.15.2.2 Main boom + jib variant 2 (17.5 m)

- a) For the lifting height chart for 73.9 m main boom + jib variant 2 (17.5 m), refer to Figure 1-18.

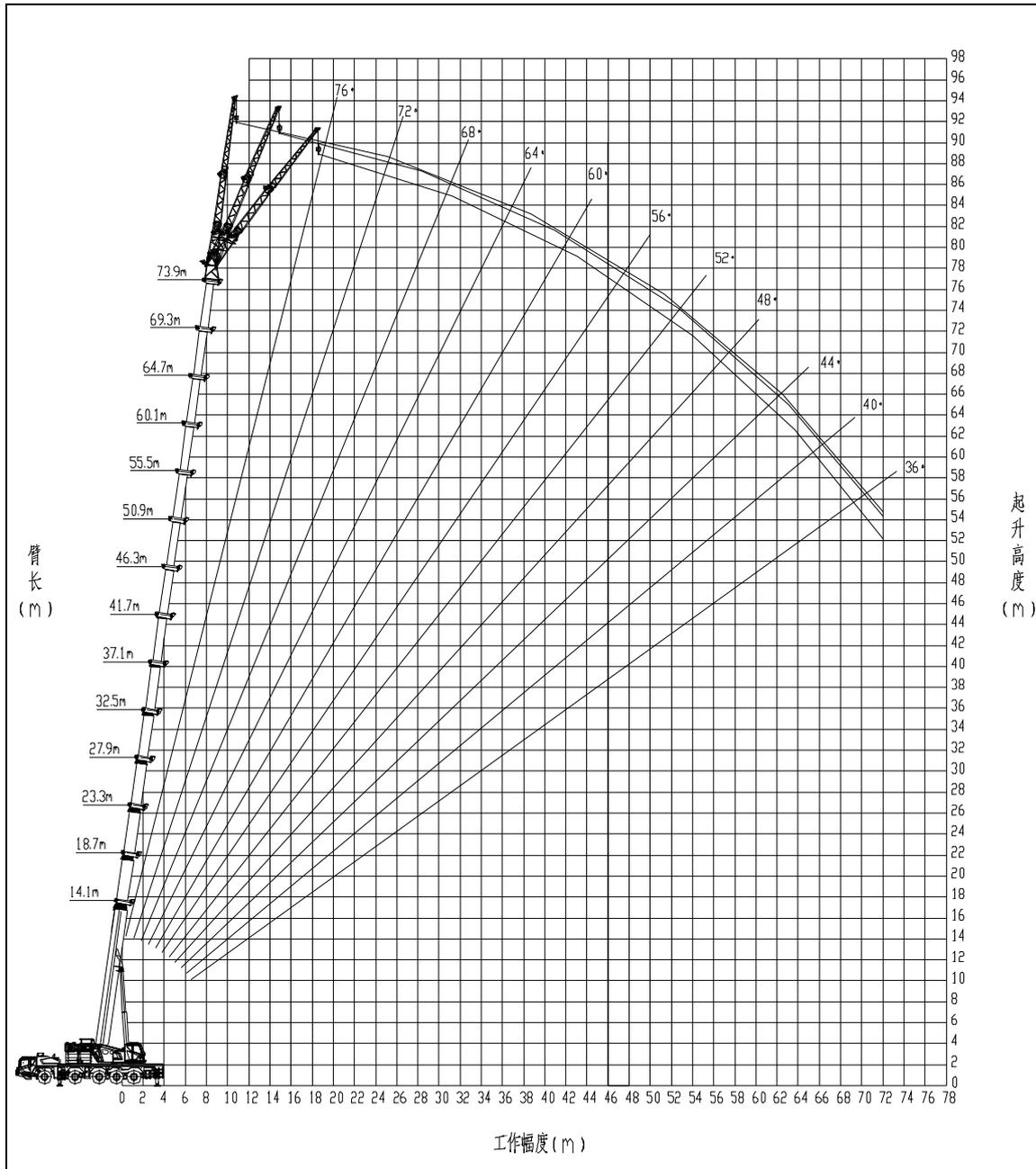


Figure 1-18 73.9 m main boom + jib variant 2 (17.5 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

- b) For the lifting height chart for 78.5 m main boom + jib variant 2 (17.5 m), refer to Figure 1-19.

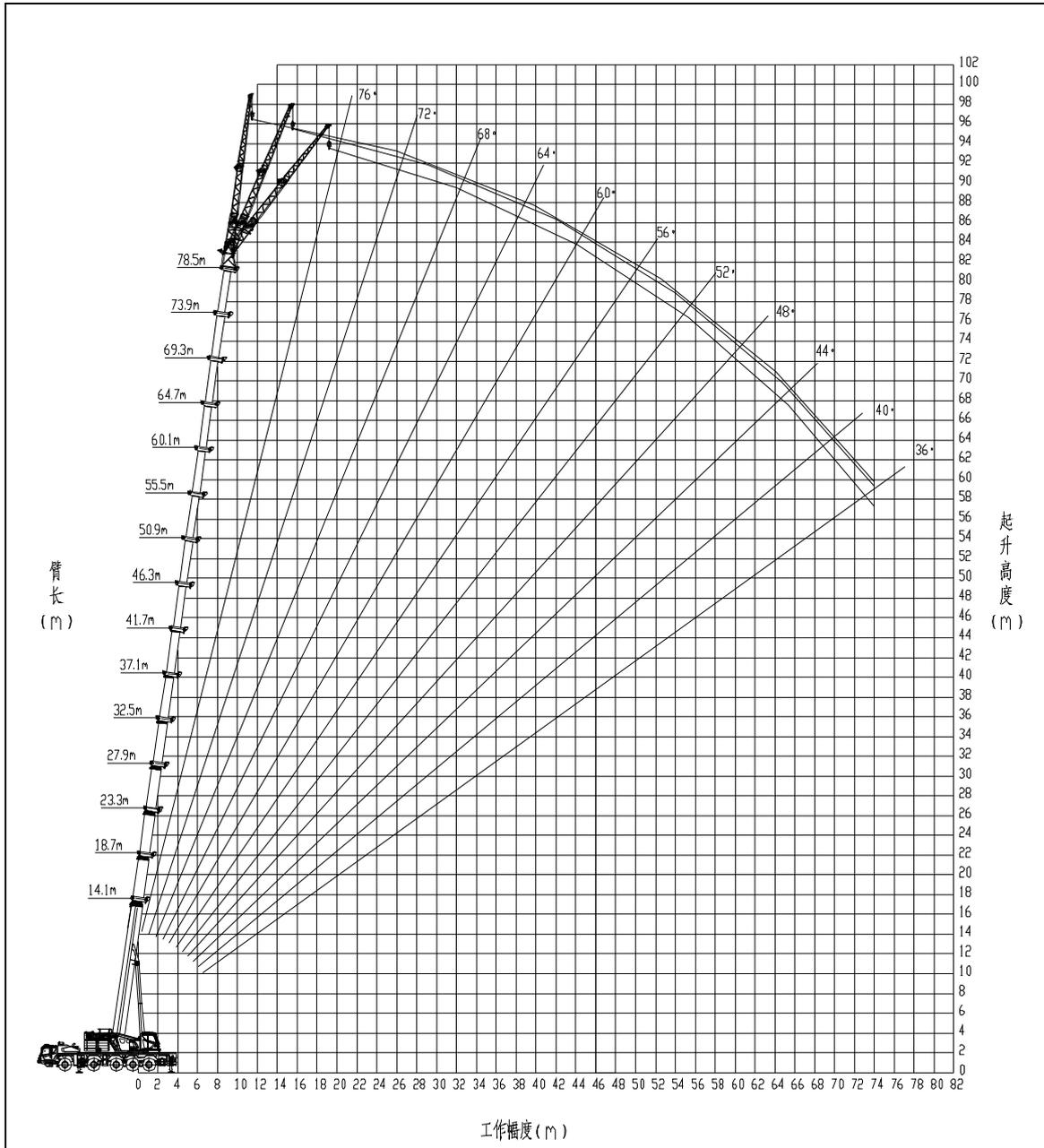


Figure 1-19 78.5 m main boom + jib variant 2 (17.5 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

1.3.15.2.3 Main boom + jib variant 3 (25.5 m)

- a) For the lifting height chart for 73.9 m main boom + 8 m extension + jib variant 2 (17.5 m), refer to Figure 1-20.

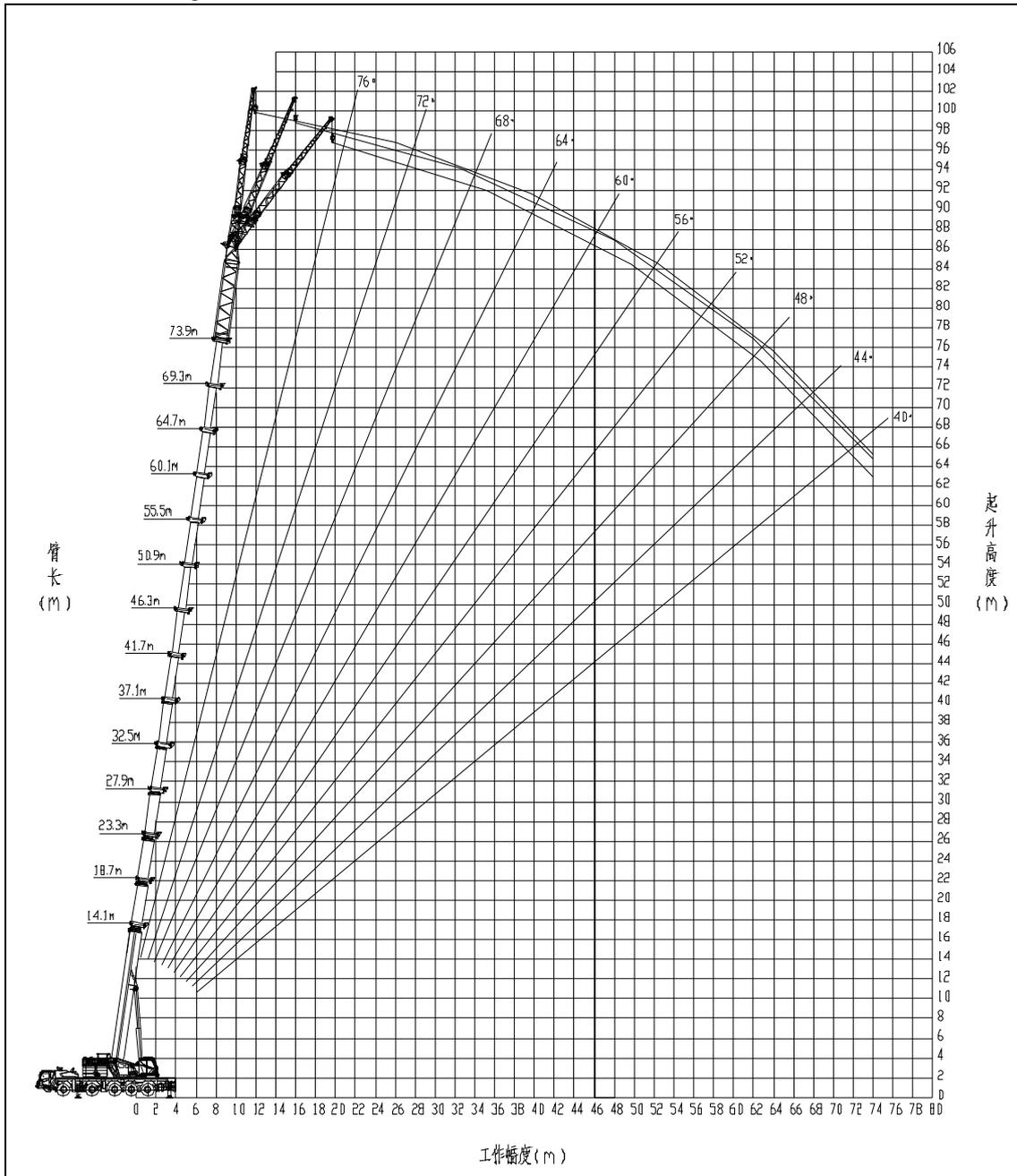


Figure 1-20 73.9 m main boom + 8 m extension + jib variant 2 (17.5 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

b) For the lifting height chart for 78.5 m main boom + 8 m extension + jib variant 2 (17.5 m), refer to Figure 1-21.

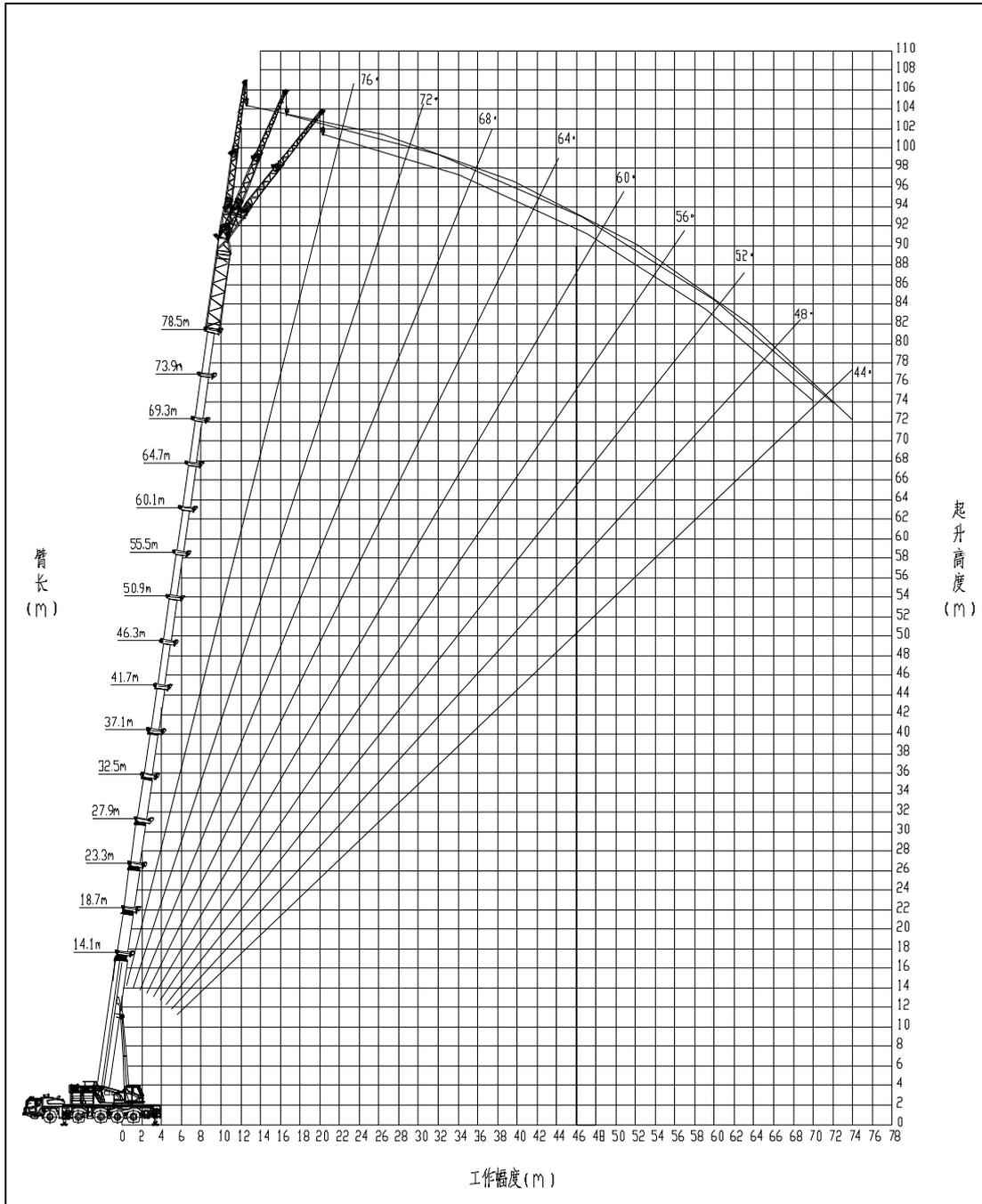


Figure 1-21 78.5 m main boom + 8 m extension + jib variant 2 (17.5 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

1.3.15.2.4 Main boom + jib variant 4 (33.5 m)

- a) For the lifting height chart for 73.9 m main boom + 8 m extension 1 + 8 m extension 2 + jib variant 2 (17.5 m), refer to Figure 1-22.

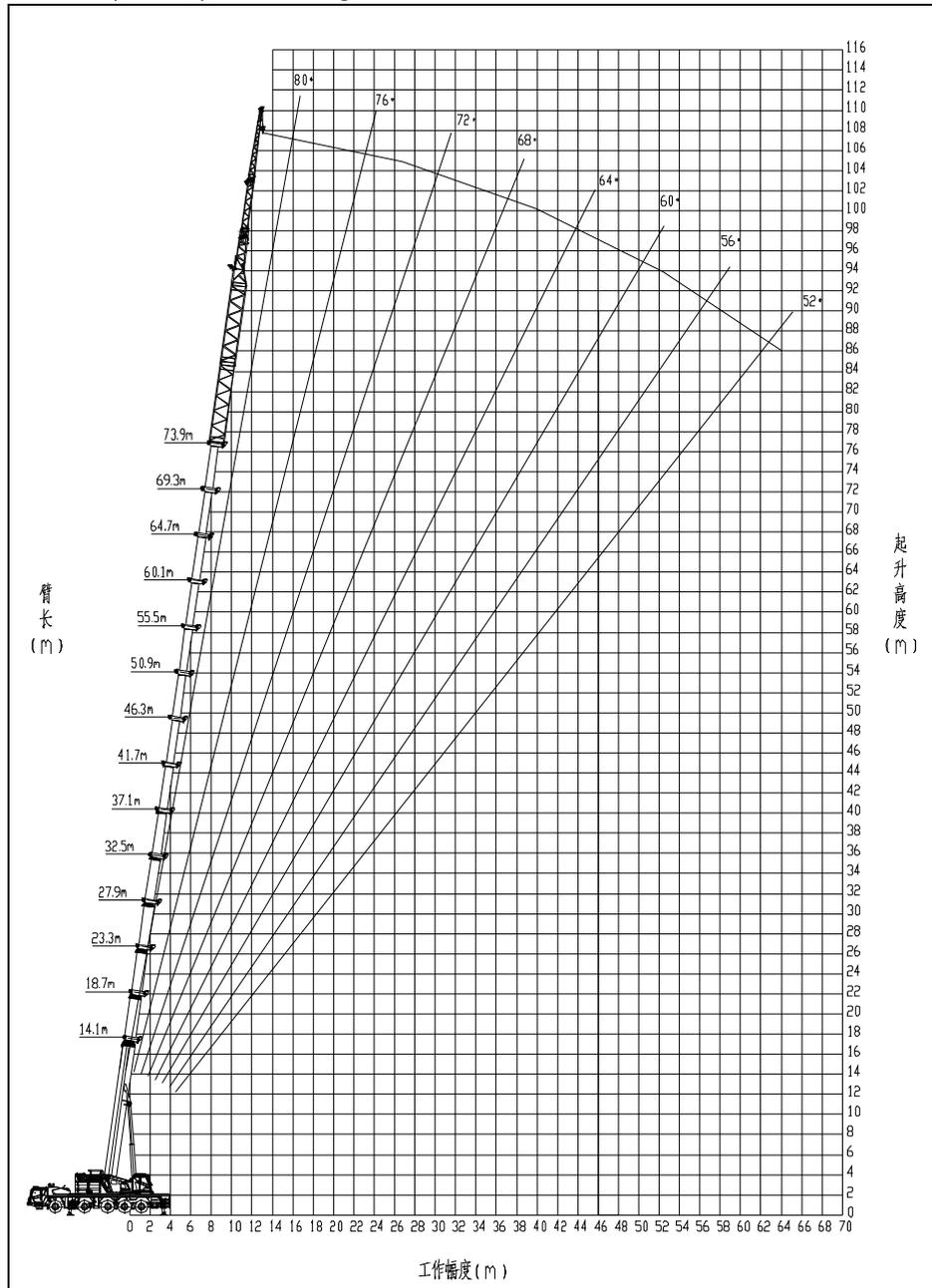


Figure 1-22 73.9 m main boom + 8 m extension 1 + 8 m extension 2 + jib variant 2 (17.5 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

- b) For the lifting height chart for 78.5 m main boom + 8 m extension 1 + 8 m extension 2 + jib variant 2 (17.5 m), refer to Figure 1-23.

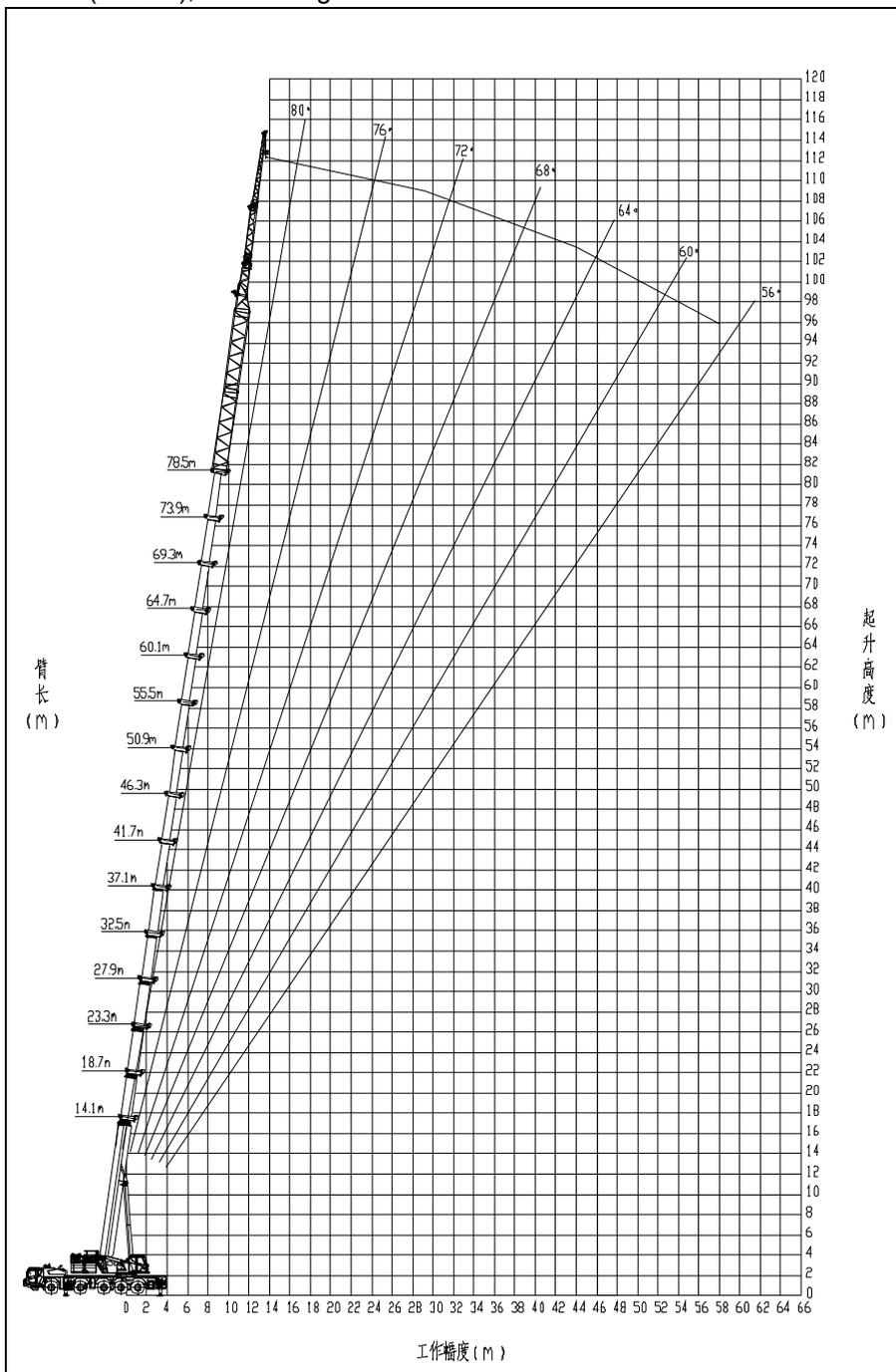


Figure 1-23 78.5 m main boom + 8 m extension 1 + 8 m extension 2 + jib variant 2 (17.5 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

1.3.15.3 Main boom + tip boom

For the lifting height chart for main boom (85 m) + tip boom (4.9 m), refer to Figure 1-24.

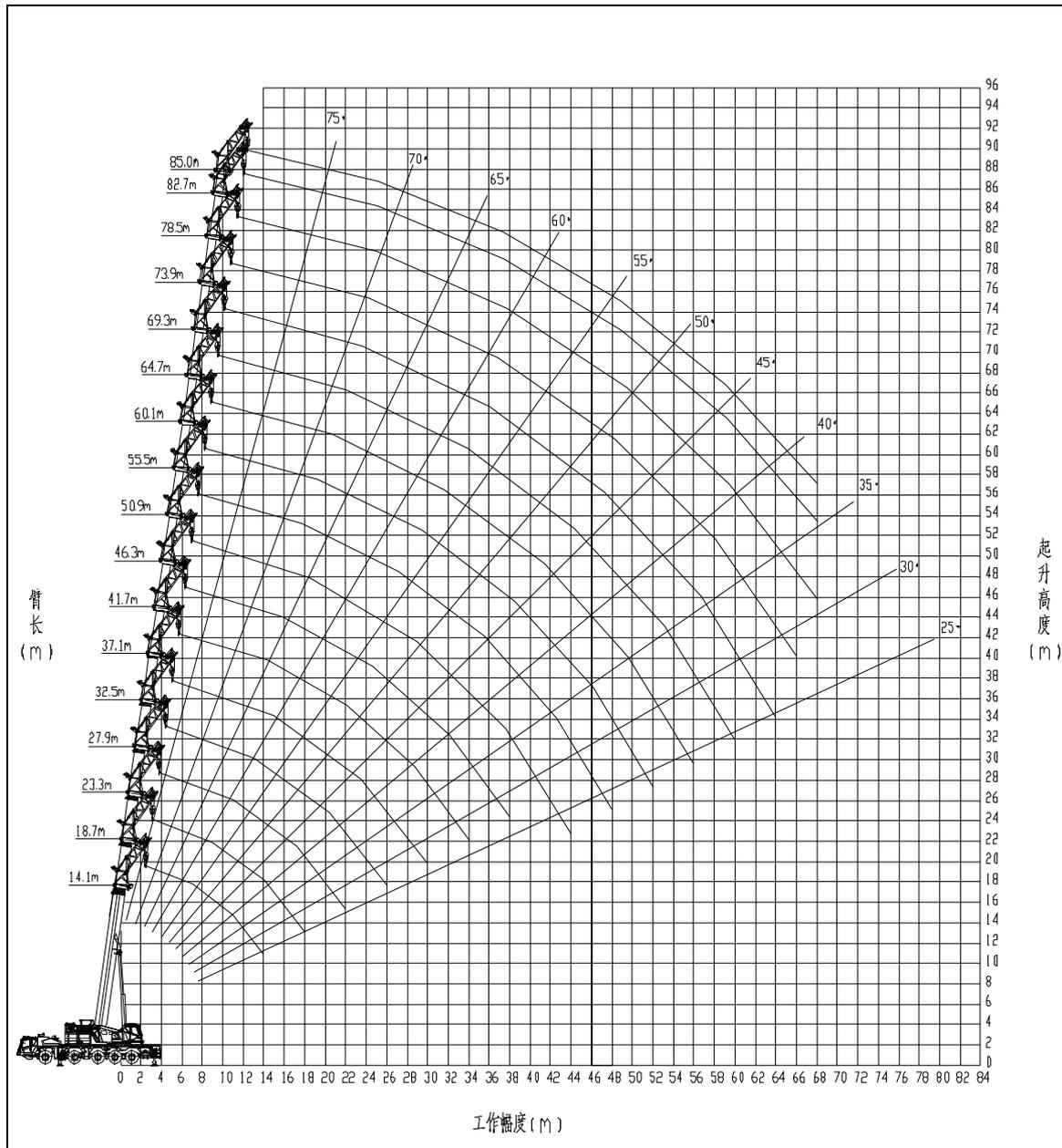


Figure 1-24 Main boom (85 m) + tip boom (4.9 m)

Note:

臂长(m) Boom length (m)

起升高度(m) Lifting height (m)

工作幅度(m) Working radius (m)

 **CAUTION**

- (1) The sliding beams of outriggers must be extended (to a uniform length on both sides) to the extent stated in the lifting capacity table. All wheels must be raised clear of the ground.
- (2) The values in the lifting capacity tables are suitable for 360° full range operation.
- (3) The values given in the lifting capacity tables are the max. permissible lifting capacities under various OMs and specified operating conditions. The values as given in the tables include the mass of the hook (Refer to Table 1-7 Hook configurations) and slings. For the rated lifting capacity, refer to Figure 1-25.

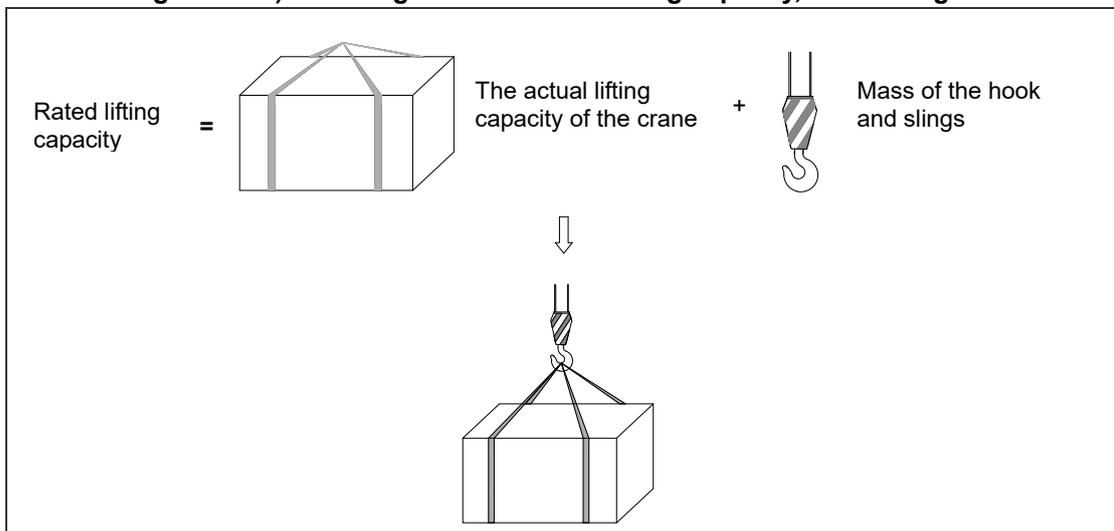


Figure 1-25 Rated lifting capacity

- (4) The working radius in lifting capacity table is measured from hook center to slewing centerline. Its unit is metric meters. The radius stated is valid under load conditions.
- (5) Use next lower rated capacity when working at radius between the figures on the rated lifting capacity table.
- (6) The numbers I, II, III, IV, V, VI and VII in the table indicate the corresponding telescopic sections (highest number = furthest telescopic section). The numbers, 1, 2, 3 and 4, display the boom status of the telescope. 1 represents the telescope extends 0%, 2 represents the telescope extends 45%, 3 represents the telescope extends 90% and 4 represents the telescope extends 100%.
- (7) The max. rated lifting capacity for the rooster sheave is 9000 kg. If the rated lifting capacity found out in the lifting capacity table is less than 9000 kg according to the actual working conditions, take the value in the rated lifting capacity table.

- (8) For example:
- (9) Under this OM - Outriggers fully extended and with 60 tons counterweight
- (10) The rated lifting capacity is 6500 kg when the actual boom length is of 32.5 m (telescoping mode: 1111322) and working radius of 26 m.
- (11) The rated lifting capacity is 7400 kg when the actual boom length is of 50.9 m (telescoping mode: 3222222) and working radius of 38 m.
- (12) Do not lift a load with both main hook and auxiliary hook simultaneously during operation.
- (13) All the working radius and lifting heights in lifting height charts do not include the deflection of main boom and jib.
- (14) The working radius of the crane must be strictly limited within the range listed in the lifting capacity table. If the specified working radius is exceeded, the crane will tip over even without a load.
- (15) Before crane operation, extend the sliding beams (to a uniform length on both sides) to the extent stated in the lifting capacity tables. After the sliding beams are in position, install the retaining pins.
- (16) Before you begin a lift operation, support the crane on outriggers.
- (17) Level the crane with the support control unit prior to lifting loads, examine frequently and relevel when necessary during operation.
- (18) The lifting capacity for the main boom is the value calculated without jib assembled.
 - When you use the boom with jib assembled:
3.2 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
 - When you use the boom with tip boom assembled:
1.0 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
 - When the jib is on the right side of main boom:
 - As for 14.1 m main boom, 1.3 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
 - As for 18.7 m main boom, 1.0 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
 - As for 23.3 m main boom, 0.8 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
 - As for 27.9 m main boom, 0.7 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
 - As for 32.5 m main boom, 0.6 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
 - As for 37.1 m main boom, 0.5 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.

- As for 41.7 m main boom, 0.5 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 46.3 m main boom, 0.5 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 50.9 m main boom, 0.4 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 55.5 m main boom, 0.4 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 60.1 m main boom, 0.4 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 64.7 m main boom, 0.4 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 69.3 m main boom, 0.4 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 73.9 m main boom, 0.3 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 78.5 m main boom, 0.3 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.
- As for 85 m main boom, 0.2 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.

(19) Do not telescope the boom with a suspended load.

1.3.16 The following parts are not included in the overall dimensions according to GB1589.

The following parts are not included in the overall dimensions according to GB1589. As for their positions, refer to Figure 1-26.

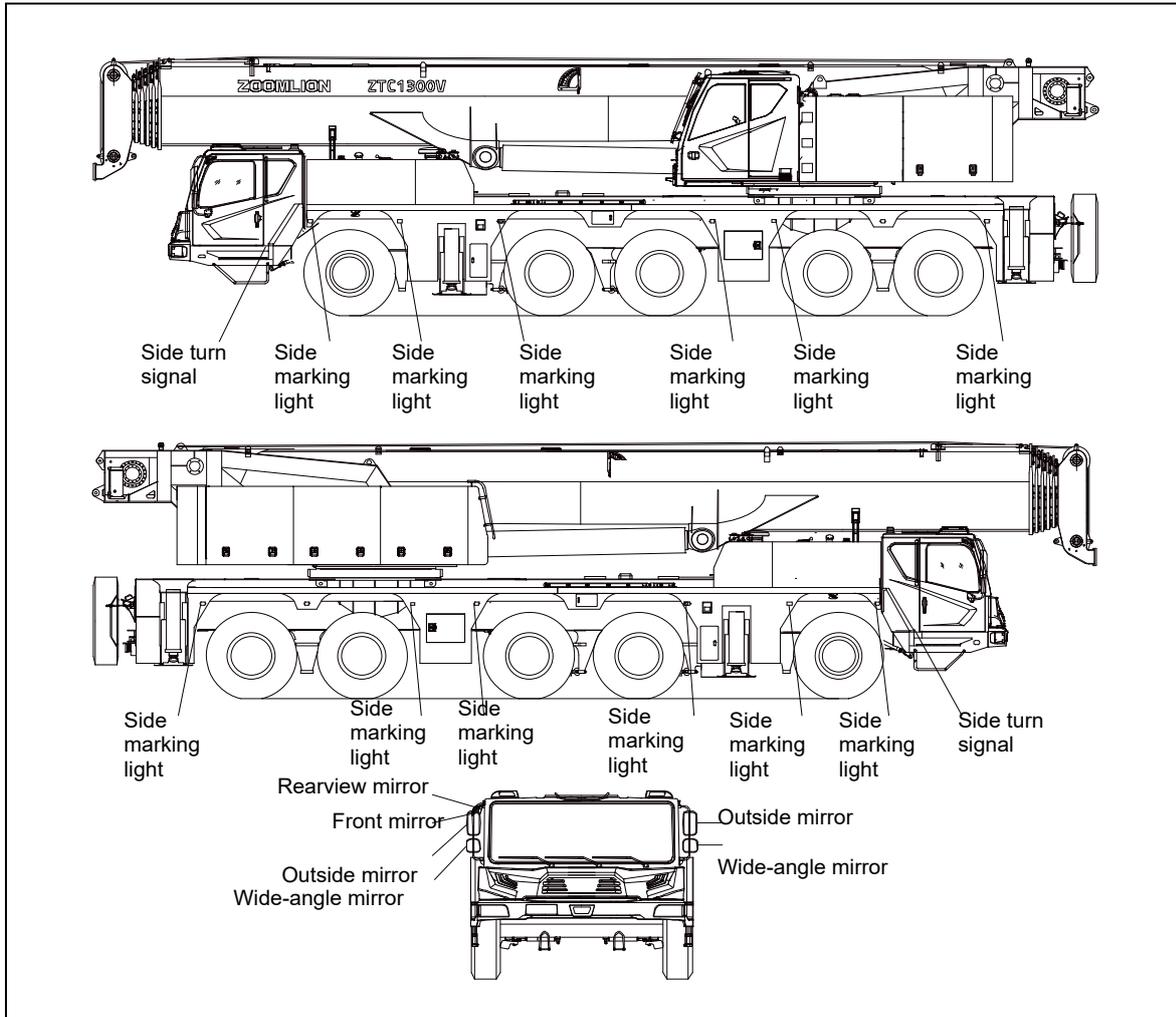


Figure 1-26 Parts excluded in the overall dimensions according to GB1589 and their positions

ZOOMLION

Truck Crane Operator'S Manual

Chapter 2 Safety Guidelines



Chapter 2 Safety Guidelines

2.1 Safety instructions and safety signs

2.1.1 Safety instructions

- a) Be sure to comply with all valid national and regional traffic regulations when driving the crane on the roads!
- b) No person is allowed to stay in operator's cab during driving.
- c) The crane must be made to comply with the relevant local traffic regulations, before it is driven on public streets, roads and other places. Make sure the weights, axle loads and dimensions are within the permits specified in the vehicle license.
- d) The relevant persons should be trained to ensure safe operation. Initial commissioning and starting must only be undertaken by a competent person who has read and fully understands the information provided in the *Operator's Manual*.
- e) Comply with the safety signs on the crane to avoid serious injuries or casualties.
- f) All the assembly, commissioning, operation, maintenance and service of crane should only be carried out by service technician.



Do not allow the hook block to impair the driver's field of vision when you drive the crane on public roads!

2.1.2 Safety signs



- (1) Some safety signs indicating potential great danger are only stuck on the vehicle body. Do not move the decals at random.
- (2) Other potential danger is mentioned in this *Operator's Manual*. Pay much attention to it.
- (3) Examine the safety signs on the potentially dangerous parts at a regular interval. Replace all missing or damaged safety signs to make sure that the decals show and are in good condition.
 - a) Read the operator's manual
This decal is only stuck on the right pane in operator's cab.



- b) Do not telescope the boom with a suspended load.

This decal is only stuck on the right pane in operator's cab.



- c) Exit

This decal is only stuck on the front windshield (inside) in operator's cab.



- d) No standing under the boom.

The decals are stuck on the left and right sides of the boom.



- e) Capacity and decal of hydraulic oil tank

The decals are on the sides of the hydraulic oil tank.



- f) Fire extinguisher

It is on the side of driver's cab near the fender.



- g) Keep clear of moving outriggers.

The decals are on the sliding beams.



2.2 Planning crane operation

In addition to a perfectly working crane and a well-trained crew, crane operation planning is an important principle of safe crane operation.

The crane operator must obtain or receive the necessary information in a timely fashion before driving to the job-site. In particular:

- a) Natural environment of job-site
- b) Job-site and travel distance
- c) Route
- d) Height and width clearance measurements
- e) Electric transmission lines
- f) Space restrictions at the job-site
- g) Movement restrictions caused by buildings
- h) Weight and dimensions of the loads to be lifted and the required lifting height and working radius
- i) Geological conditions or ground bearing capacity at the job-site.

Basing on the above information, the crane operator must assemble the equipment required to operate the crane:

- a) Load hook / hook block
- b) Load handling device
- c) Counterweight
- d) Jib
- e) Underlay materials for outrigger pads.



Crane operation may not be possible or improvisation can result if a crane operator does not have all the required data.

2.3 Break-in instructions

The purpose of crane break-in is to improve its adaptability to the environment. Proper break-in operation can extend crane service life, increase work reliability and save energy consumption. Pay attention to the following items during the break-in period:

- a) During initial crane operation (less than 100 operating hours), you must follow the below instructions during this time period:
 - The work load and work speed must not be too high.
 - The maximum lifting capacity should not be larger than 80% of the rate one.
 - Do not operate the crane at a speed that is more than the maximum limits..
- b) Do not drive the crane at a driving speed higher than 55 km/h and with an engine speed higher than 1800 r/min. within the first 600 km. Drive the vehicle on even road.
- c) Increase the driving speed or engine RPM gradually after the first 600 km and 2000 km.
- d) Replace the engine oil after the first 2500 km and 3000 km.
- e) Do start and stop the vehicle slowly and gently. Shift the transmission frequently to break in it at every gear position.
- f) Break in the brake linings:

To achieve optimum braking performance, all new brake linings must be broken in by activating the brakes. Activate the brakes by pumping them at low to high speed. Hard braking is not permitted. In general, the break-in distance depends on the type of vehicle, but a minimum of 500 km is recommended. During this phase, the maximum temperature of brake hub may not exceed 200°C.



Risk of accident!

The risk of accident increases when new brake linings are subjected to one or more braking operations over extended periods of time or if the vehicle is forced to a stop by hard braking from maximum speed several times.

Hard braking and continuous braking are not permitted!

2.4 General safety technical guidelines

2.4.1 Requirements of the crane operator, rigger and signalman

The primary responsibility of crane operator, rigger and signalman is to control, operate, adjust the crane and conduct the operation in a manner that is safe for both themselves and others.

Many crane accidents are caused by incorrect crane operation.

The main **operating errors**, which are made again and again while operating or driving a crane, are as follows:

- a) Not paying careful attention while working, for example:
 - 1) Slewing too quickly
 - 2) Quick braking of the load
 - 3) Diagonal pulling when the load is still on the ground
 - 4) Loose wire rope formations.
- b) Overloading.
- c) Crashing into bridges, roofs or high voltage wiring due to insufficient vertical clearance.
- d) Unsuitable operation when lifting a load with several cranes at the same time.

About 20% of crane damages are caused by improper maintenance:

- a) Insufficient lubricating oil, lubricating grease or antifreeze
- b) Broken wire rope, worn parts
- c) Limit switches or load moment limiter not operating properly
- d) Brake or transmission failure
- e) Hydraulic system defects (for example: cracked hoses)
- f) Loose bolts.



In the interest of both yourself and others, make sure you understand how your crane operates and familiarize yourself with all the risks associated with the work to be done.

2.4.1.1 General qualifications for operator

Qualifications for operator:

- a) The person who has been trained with the safety knowledge about the crane operation
- b) Healthy and agile
- c) Eyesight (remedied eyesight included) is above 0.7, no color blindness.
- d) Hearing is qualified.
- e) Know about the possible fatalness existing in the working area.
- f) The ability to estimate and monitor load is enough.
- g) Be able to estimate and monitor the distance, height, clearance and load correctly.

- h) Be familiar with the *Operator's Manual* for the crane, and know the working principle, lifting performance, structural performance and the function and adjusting method of the safety devices as well as master the operation essentials and maintenance skills.
- i) Be familiar with safety rules, safety signals and symbols.
- j) Be qualified with the work in hearing, eyesight and reaction ability. Have the requisite physical to operate the crane safely. Be able to estimate the distance, height and clearance correctly.
- k) Know how to administer first aid and know how to use a fire extinguisher. Know how to survive in an emergency.

NOTICE

Make sure that only authorized personnel who are satisfy these above-mentioned qualifications are allowed to operate the crane.

NOTICE

- (1) The operator should examine the brakes, hook block, wire rope and safety devices before operation. Correct the malfunction.**
- (2) The operator must focus his attention on his work during operation and is forbidden to chat with others. Generally speaking, the operator can only follow the signal sent out by appointed persons. However, for a stop signal, the operator should obey it at all times, no matter who send it out. He should refuse to follow signal which violates operation regulations. Stop the crane immediately if somebody is found climbing the crane.**
- (3) Operator who is in low spirits or poor health is not allowed to operate the crane. Do not drink before operation.**

2.4.1.2 General qualifications for the rigger

The rigger is responsible for ensuring that the load is slung or released safely and carefully and decides which hook and load handling device to be used in accordance with work plan. The rigger is also responsible for the safety of the crane.

Qualifications for the rigger:

- a) With crane operation certificate.
- b) Be qualified with the work in hearing, eyesight and reaction ability.
- c) Be able to estimate and monitor the distance, height, clearance and load correctly.
- d) Have been trained in the skill of handling load.
- e) Be able to choose the proper hook and load handling device according to conditions of the load.
- f) Have been trained in hand signals for operation and is familiar to use them.

- g) Be able to safely use audio equipment (such as interphone) to send out oral order exactly and clearly.
- h) Make sure that only authorized personnel are allowed to carry out the work.

2.4.1.3 General qualifications for the signalman

The signalman is to transfer the signal from the rigger to operator. He can substitute for the rigger to conduct the crane operation, but such work can only be done by one person at any time.

Qualifications for the signalman:

- a) Be qualified with the work in hearing, eyesight and reaction ability.
- b) Be able to estimate the distance, height and clearance correctly.
- c) Have been trained in hand signals for operating and is familiar to use them.
- d) Be able to safely use audio equipment (such as interphone) to send out oral order exactly and clearly.
- e) Make sure that only authorized personnel are allowed to carry out the work.

2.4.2 Selecting an operating site

It is very important to choose an appropriate location for crane operation in order to minimize safety risks.

When you select the placement location of the crane, observe the following:

- a) Crane operations can be carried out within the necessary radius (working radius and counterweight slewing radius).
- b) Support the crane and other things only on the ground with sufficient load bearing capacity.
- c) The ground pressure should comply with the permitted and expected value with a required lifting load.

2.4.2.1 Slopes and ditches

The crane may not be set up too close to slopes or ditches. Maintain adequate safety clearances in accordance with the type of soil. The formulas for calculating the safety clearance are as follows:

For non-cohesive and soft cohesive

ground:

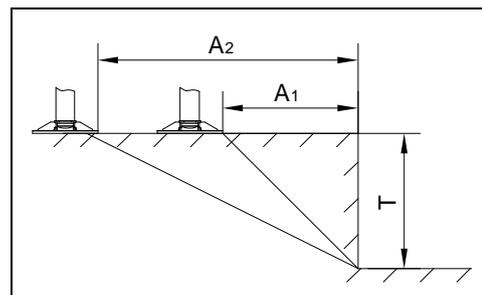
$$A_2 = 2T \quad (1)$$

For stiff or semi-solid cohesive

ground:

$$A_1 = T \quad (2)$$

T refers to the depth of ditch.





If the safety distance cannot be maintained, fill and level up the slope and ditch. Otherwise the crane may topple!

2.4.2.2 Permissible ground pressure of outrigger

When the crane is supported on outriggers for a lift operation, the outriggers transmit significant forces to the ground. In certain cases, a single outrigger has to transmit almost the entire weight of the crane, plus the load weight, to the ground. The ground must be able to safely absorb this pressure every time. If the outrigger pad area is inadequate, then it must be supported from below according to the load bearing capacity of the ground.

The formula for calculating the required support area is as follows:

Support area = maximum crane support force / load bearing capacity of the ground

The pressure strength of a variety of ground types are show in Table 2-1, and it is for reference only.

Table 2-1 Load bearing capacity of the ground

Soil type		Load bearing capacity (kg/cm ²)
A	Back-filled, naturally compacted ground	0 – 1
B	Natural, clearly undisturbed ground:	
	1. Mud, peat, marshy soil	0
	2. Non-cohesive ground, sufficient compactly layered soil	
	Fine to medium grained sand	1.5
	Coarse-grained sand to gravel	2.0
	3. Cohesive ground:	
Sludgy	0	
Soft	0.4	
Firm	1.0	
Semi-compact	2.0	
Hard	4.0	
	4. Rock with few fissures, in healthy, unweathered condition and in a favorable location:	
	In cohesive layer order	15
	In massive or column-style shape	30
C	Artificially compacted ground:	
	1. Asphalt	5 – 15

	Soil type	Load bearing capacity (kg/cm ²)
2.	Concrete	
	Concrete group B I	50 – 250
	Concrete group B II	350 – 550

Note:

If there is anything about the load bearing capacity of the ground at the placement site that you do not understand, use a special detecting instrument to do a soil test.



Only use strong materials, such as properly dimensioned wooden timbers, for the outrigger pad bases.

In order to make sure that pressure is evenly distributed over the base surface, position the outrigger pads in the center of the support base.

2.4.3 Supporting

- a) Before operation, all wheels must be raised clear of the ground.
- b) Before you extend the vertical cylinders, extend the sliding beams to the specified positions.
- c) Extend all the sliding beams according to the data in the lifting capacity tables and secure them by pins.
- d) Before operation, level the crane. Under any working conditions, the inclination angle α of the crane cannot be more than 0.6° . Refer to Figure 2-1.

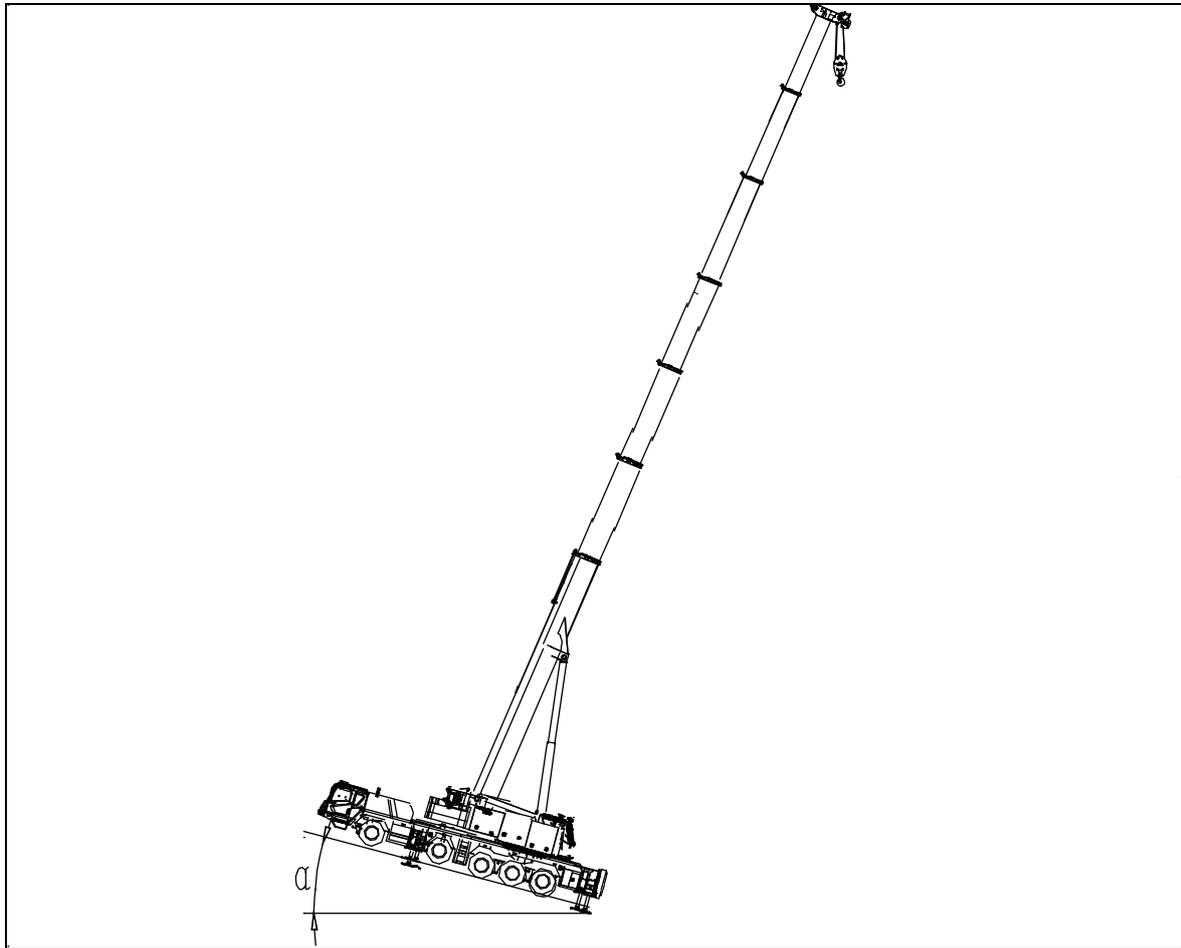


Figure 2-1 Inclination angle of crane

! DANGER

If the crane is positioned at an incline and the boom is turned towards the downslope, then the radius is increased as a result. It is possible that the crane can topple in extreme cases.

After the crane is supported, examine the following safety measures:

- The placement location has been selected in such a way that the crane can be operated with the least possible radius.
- The load bearing capacity of the ground is adequate.
- There is a sufficient safe distance to slopes or ditches.
- All outriggers have been extended to the specified positions.
- The outriggers are secured with pins.
- The outrigger pads are secured.
- The crane has been leveled.
- All tires do not touch the ground.

- i) There are no live electrical wires within the working range of the crane.
- j) There are no obstacles which will hinder the required crane movements.

2.4.4 Working conditions

2.4.4.1 Temperature

Do not operate the crane if the temperature at the job-site is not in the proper range (-20°C to 40°C).

NOTICE

- (1) Pay attention to the ambient temperature in the job-site.
- (2) If you operate the crane when the ambient temperature is beyond the proper range, the crane may damage and cannot work normally.

CAUTION

In special circumstances, if you want to operate the crane within a short time when the ambient temperature is beyond the proper range:

- (1) Must use a low temperature storage battery (220A) when the ambient temperature is lower than -20°C.
- (2) Must replace the oil medium according to the ambient temperature at the job sites. Refer to Table 2-2.

Table 2-2 Oil medium

Oil medium	Injected position	Model	Gross capacity (L)	Ambient temperature	Remarks
Fuel oil	Fuel tank of chassis	-50# diesel oil	about 500	-29°C -- 44°C	—
		-35# diesel oil	about 500	-14°C - -29°C	—
		-20# diesel oil	about 500	-5°C - -14°C	—
		-10# diesel oil	about 500	4°C - -5°C	—
		0# diesel oil	about 500	4°C - 8°C	—
		5# diesel oil	about 500	≥8°C	—
Coolant (antirust and antifreezing solution)	Expansion tank of chassis, water tank for independent heater of superstructure	Long-acting all-weather general purpose antifreezing solution	about 80	-25°C - 40°C	
		Brand No. -25, Weichai special engine coolant	about 80	-25°C - 40°C	
		Brand No. -35, Weichai special engine coolant	about 80	-35°C - 40°C	

Oil medium	Injected position	Model	Gross capacity (L)	Ambient temperature	Remarks
		Brand No. -45, Weichai special engine coolant	about 80	-45°C - 40°C	
Engine oil	Weichai engine of chassis (China VI)	15W/40 CK-4 grade engine oil	about 40	-25°C - 40°C	Do not use the engine oil of different brands and specifications together.
		5W/30 CK-4 grade engine oil	about 40	-35°C - 40°C	
		0W/30 CK-4 grade engine oil	about 40	-45°C - 40°C	
Freezing medium	Filler of A/C pipelines	R-134a	about 1kg	—	Superstructure and chassis are the same.
Heavy-duty gear oil	Transmission	85W/90	about 16	-14°C - 40°C	Do not use the gear oil of different brands and specifications together.
		80W/90		-26°C - 40°C	
		QF II 75W/80		-40°C - 40°C	
	Transfer case, chassis	85W/90	about 13	-14°C - 40°C	
		80W/90		-26°C - 40°C	
		QF II 75W/80		-40°C - 40°C	
	Drive axle	85W/90	A Kishiler axle: about 27; a Hande axle about 19.	-14°C~40°C	
		80W/90		-26°C~40°C	
		75W/90		-40°C~40°C	
	Load bearing axle	85W/90	A Kishiler axle: about 6; a Hande axle about 0.	-14°C~40°C	
		80W/90		-26°C~40°C	
		75W/90		-40°C~40°C	
	Steer and driven axle	85W/90	A Kishiler axle: about 6; a Hande axle about 5.	-14°C~40°C	
		80W/90		-26°C~40°C	
		75W/90		-40°C~40°C	
Hydraulic oil	Hydraulic oil tanks,	GB11118.1/L-HM68	Superstructure:	15°C - 40°C	Do not use the hydraulic oil of
		GB11118.1/L-HM46(AE)	about 1250/	-5°C - 40°C	

Oil medium	Injected position	Model	Gross capacity (L)	Ambient temperature	Remarks
	superstructure and chassis	46)	Chassis: about 270		different brands and specifications together.
		GB11118.1/L-HV32		-20°C - 40°C	
		SH 0358-95/10		-50°C - 0°C	
		XLT32(Polar32)		-36°C - 40°C	
Industrial closed gear oil	Slewing reducer	L-CKD220	about 9	-15°C - 40°C	Do not use the industrial closed gear oil of different brands and specifications together.
		AP-S220		-35°C - 40°C	
	Winch reducer	L-CKD220	about 7.5	-15°C - 40°C	
		AP-S220		-35°C - 40°C	

2.4.4.2 Wind load

Before operation, measure the wind speed with the anemometer on boom head. At the same time, judge the instantaneous wind speed according to physical phenomenon. The maximum wind force during crane operation is Beaufort 5. That is to say, the wind speed is 14.1 m/s and the wind pressure is 125 N/m².

2.4.4.2.1 Wind speed

During operation, the instantaneous wind speed should be taken as the actual one. Wind speed during crane operation should not exceed 14.1 m/s.

The wind speed during crane operation (3 seconds instantaneous wind speed) = average value of wind speed for 10 minutes of 10 m above the ground × conversion coefficient 1.5.

For the Beaufort and wind speed in weather forecast, please refer to Table 2-3.

Table 2-3 Wind speed

Beaufort	Description	Average wind speed (m/s)	Instantaneous wind speed (m/s)	Effect of the wind on the land
0	Calm	0 – 0.2	0 – 0.3	No wind, smoke rises vertically
1	Slight air (draft)	0.3 – 1.5	0.5 – 2.3	Wind direction shown by smoke drift but not by wind vanes
2	Light breeze	1.6 – 3.3	2.4 – 5.0	Wind felt on face, leaves rustle, vanes move by wind
3	Gentle breeze	3.4 – 5.4	5.1 – 8.1	Leaves and small twigs in constant motion, wind extends light flag
4	Moderate breeze	5.5 – 7.9	8.3 – 11.9	Dust swirls up, small branches move
5	Fresh breeze	8.0 – 10.7	12 – 16.1	Small trees in leaf begin to sway
6	Strong breeze	10.8 – 13.8	16.2 – 20.7	Large branches in motion, difficult to use umbrellas, whistling heard in telegraph wires
7	Stiff wind	13.9 – 17.1	20.9 – 25.7	Whole trees in motion, difficult to walk against the wind
8	Gale force wind	17.2 – 20.7	25.8 – 31.1	Breaks twigs off trees, impedes progress
9	Gale	20.8 – 24.4	31.2 – 36.6	Slight structural damage (roof tiles and chimney covers, etc. blown off)
10	Severe gale	24.5 – 28.4	36.8 – 42.6	Trees uprooted, considerable damage occurs
11	Violent storm	28.5 – 32.6	42.8 – 48.9	Extensive, widespread storm damage
12	Hurricane	> 32.7	> 49.1	Major destruction

2.4.4.2.2 Wind pressure

Crane operation is affected by wind speed. The higher the height above the ground is, the stronger the wind speed is, and the higher the wind pressure is.

Wind pressure = ground wind pressure × height changing coefficient of wind pressure

The equation of wind pressure and wind speed: $p = 0.625 v_s^2$ (where, p represents wind pressure (unit: N/m^2), and v_s represents average instantaneous wind speed (unit: m/s).

K_h represents height changing coefficient of wind pressure.

Take the ground wind speed of 14.1 m/s as an example. For the wind pressure and wind speed of different heights, please refer to Table 2-4.

Table 2-4 Wind speeds for different heights above ground

Height above ground (m)	≤ 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
K_h	1	1.13	1.32	1.46	1.57	1.67	1.75	1.83
Wind speed v_s (m/s)	14.1	15.03	16.25	17.09	17.72	20.02	20.49	20.96
Height above ground (m)	80 – 90	90 – 100	100 – 110	110 – 120	120 – 130	130 – 140	140 – 150	
K_h	1.90	1.96	2.02	2.08	2.13	2.18	2.23	
Wind speed v_s (m/s)	21.35	21.69	22.02	22.34	22.61	22.87	23.13	



If the instantaneous wind speed is greater than the permissible value of 14.1 m/s (beaufort 5), while the crane is in operation, do the tasks that follow:

- (1) Stop the work (safely lower the load).
- (2) Retract the boom.
- (3) Correctly stow the boom.

2.4.4.3 Height above sea level

During crane operation, the height above sea level of the job-site should not be higher than 2000 m.

If the height above sea level of the job-site is higher than 2000 m, have the crane made to order.

The technical data of this crane such as gradeability and fuel consumption etc. are applied to the job-site of which the height above sea level is below 2000 m.

NOTICE

The higher the height above sea level is, the lower the air pressure is, and the less the oxygen content is.

The height above sea level is higher than 2000 m, the following crane performance will be affected:

- (1) The gradeability is reduced.**
- (2) The fuel consumption is increased.**
- (3) The boiling temperature of the engine coolant decreases.**
- (4) The exhaust system emits black smoke.**

2.4.4.4 Direct sunshine

A temperature difference occurs between the side facing the sun and the side facing away from the sun in cranes with telescopic booms. This causes telescopic boom side distortion, which can reduce the load-bearing capacity of the telescopic boom.

DANGER

Risk of accident because of component overloading!

- (1) If the telescopic boom has become distorted because of one-sided sunlight, this can cause component overloading and therefore accidents.**
- (2) When a telescopic boom extension such as a jib is being used, the equipment and the work site must be visually inspected before picking up the load in order to ensure that the boom is not showing signs of side deformation because the sun shining on one side. According to the condition of the work site, adjust the operation posture of crane. Turn crane directly towards the sun or behind the sun so that both sides of the boom are brought to about the same temperature, therefore preventing side deformation!**

2.4.4.5 Other conditions

- a) During crane operation, if the visibility is less than 200 m, do the tasks that follow:
 - 1) Stop the work (safely lower the load).
 - 2) Retract the boom.
 - 3) Correctly stow the boom.
- b) During crane operation, stop working in case of thunderbolt or rainstorm. At the same time, take action to prevent lightning and thunderbolt to ensure personnel safety.



During crane operation, stop working in case of thunderbolt or rainstorm. At the same time, fully retract and correctly stow the boom.

- c) Strong electromagnetic fields are likely to be present if the construction site is close to a transmitter. Before you operate a crane in the vicinity of transmitters, consult a high frequency specialist or contact the local distributor and the manufacturer.

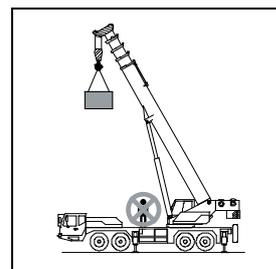
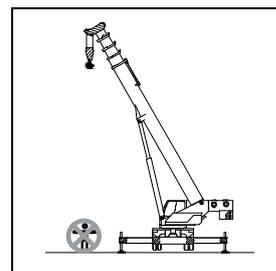


Electromagnetic fields can expose people and objects to direct and indirect risks, such as:

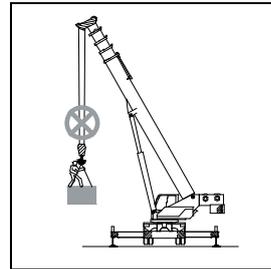
- **Effect on human organs due to radiation**
- **Spark or electric arc formation.**

2.4.5 Points for attention for safe operation

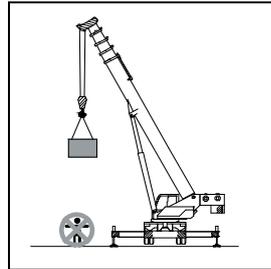
- a) Personnel must stay away from the area below the boom.
- b) Do not let personnel on the slewing table while you operate the crane.



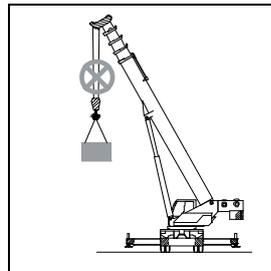
- c) Do not move personnel on the load or other equipment used to lift.



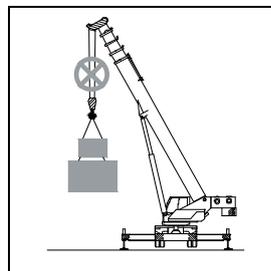
- d) Do not move a load above personnel.



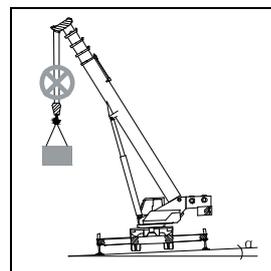
- e) Support the crane on outriggers before operation.



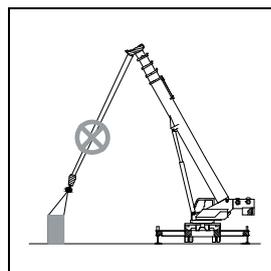
- f) Do not lift a load that is above the capacity of the crane.



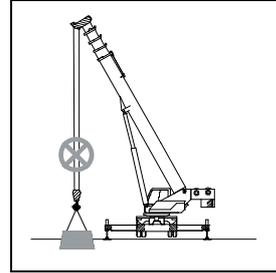
- g) The crane, with extended outriggers, must be on the ground with a slope α of less than 0.6° during operation.



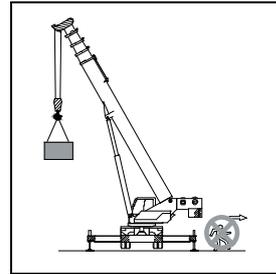
- h) Do not pull load at an angle and do not lift a load that is not in balance.



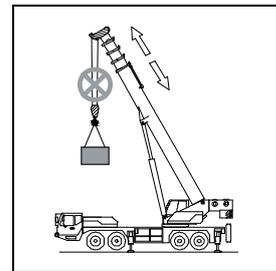
- i) Do not try to lift a load that is buried or frozen on the ground.



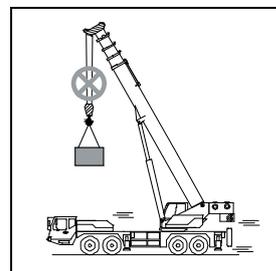
- j) When the load is off the ground, the operator must stay in the cab.



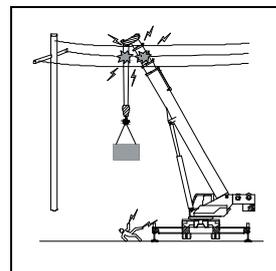
- k) Do not telescope the boom with a suspended load.



- l) Do not pick-and-carry a load.



- m) When the job-site is in the vicinity of live power lines, you must keep a safe distance. Make sure that you comply with the related regulations.



- n) Personnel must stay away from the reach of the boom.
 o) Stop the crane in an emergency.
 p) Do not adjust the hoist gear brake when the crane is with a load.
 q) Keep no less than 3 wraps of wire rope on the drum.
 r) Before crane operation, adjust the slings (rope or chain) to make the hook block on the upright position of load gravity center.
 s) Prevent the load or lifting equipment from collision with crane.

- t) During crane operation, stop working in case of thunderbolt or rainstorm. At the same time, take action to prevent lightning and thunderbolt to ensure personnel safety.
- u) Before you start or stop the crane operation, make sure the movable parts and movable load in danger zone will not interrupt any persons and objects.
- v) When the actual lifting load reaches 90% of the rated one, the warning light will light up and the buzzer will sound the alarm. When this occurs, be careful as you continue to lift.
- w) The operation should be stable and gentle. Do not carry out any jerky movements with the joysticks. Avoid any sudden acceleration or braking or conversion operation.



Stop the operation or do not start to lift a load, if one of the items that follow occurs:

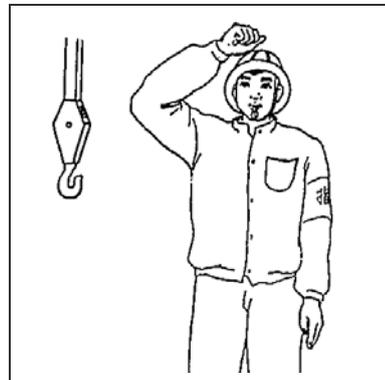
- (1) An overload or if the weight of the load is unknown.**
- (2) The load lift moves out of position, the rigging becomes too loose or the load is out of balance.**
- (3) The protective material between the edges of load and wire rope is missing.**
- (4) The light level at the job-site goes below a safe work condition.**
- (5) Equipment malfunction or damage to the crane (such as failure of brake and safety devices or damage to wire rope) that decreases the safe operation of the crane.**

2.5 Hand signals

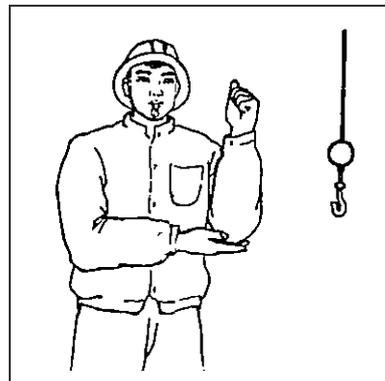
- a) Start
Hold the right arm stretched vertically upwards. The palm faces forwards.



- b) Use the main winch
Tap fist on head, then use regular signal.



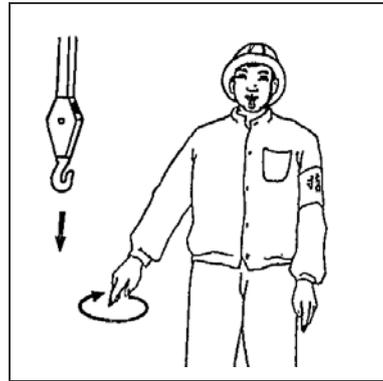
- c) Use the auxiliary winch
Tap elbow with one hand, then use regular signal.



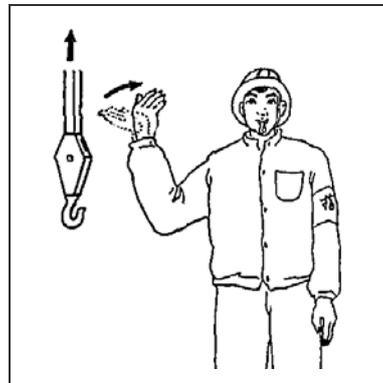
- d) Lift the load
With forearm vertical, extended fingers pointing up, move hand in small horizontal circle.



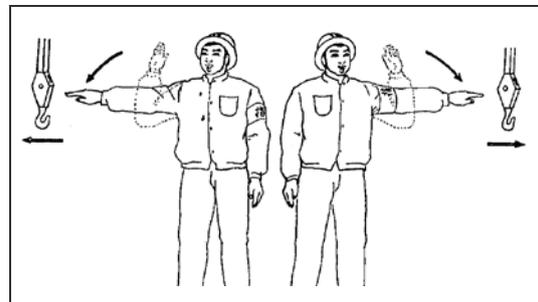
- e) Lower the load
 With arm extended downward with a 30° angle to the body, forefinger pointing down, move hand in small horizontal circle.



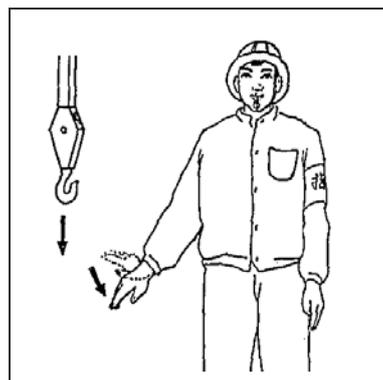
- f) Lift the load slowly
 With forearm vertical, palm of the hand facing upwards, wave hand up repeatedly.



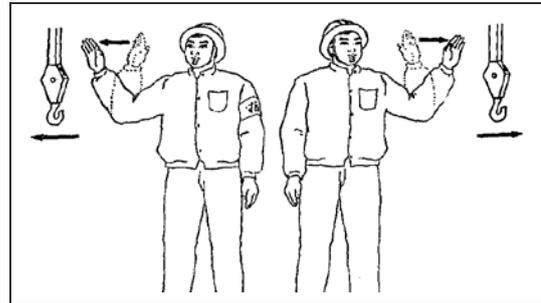
- g) Rotate
 Turn left: With right forearm vertical, the palm of the hand facing outwards, lower the forearm sideways horizontally, fingers pointing in the direction of rotation.
 Turn right: With left forearm vertical, the palm of the hand facing outwards, lower the forearm sideways horizontally, fingers pointing in the direction of rotation.



- h) Lower the load slowly
 With arm extended downwards with a 30° angle to the body, palm of the hand facing downwards, wave hand down repeatedly.

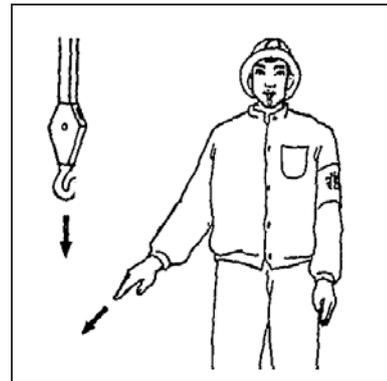


- i) Rotate slowly
Turn left: With right forearm vertical, the palm of the hand facing outwards, move forearm horizontally and repeatedly, fingers pointing in the direction of rotation.



Turn right: With left forearm vertical, the palm of the hand facing outwards, move forearm horizontally and repeatedly, fingers pointing in the direction of rotation.

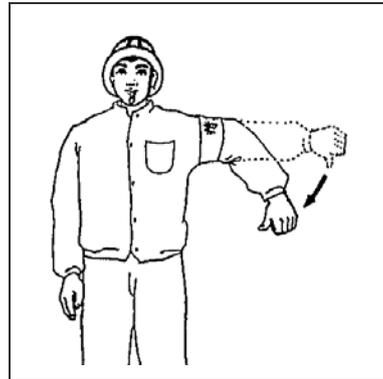
- j) Indicate the load lowering position
Extend the fingers to point at the position the load should fall on.



- k) Raise the boom
Arm extended, finger closed, thumb pointing upward.



- l) Lower the boom
 Arm extended, finger closed,
 thumb pointing downward.



- m) Raise the boom slowly
 Forearm extends in front of body
 with palm facing downwards,
 another hand moves up and down
 with thumb pointing upwards.



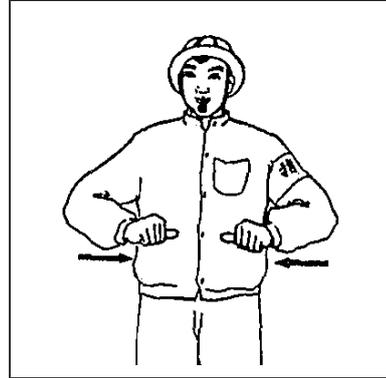
- n) Lower the boom slowly
 Forearm extends in front of body
 with palm facing upwards, another
 hand moves up and down with
 thumb pointing downwards.



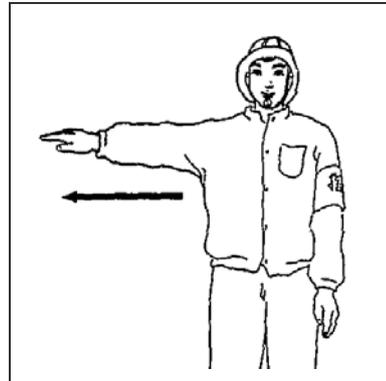
- o) Extend the boom
 Both fists in front of body with
 thumbs pointing outwards.



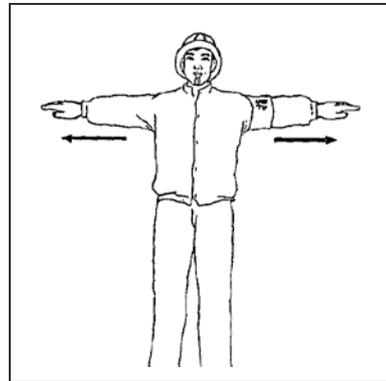
- p) Retract the boom
Both fists in front of body with thumbs pointing toward each other.



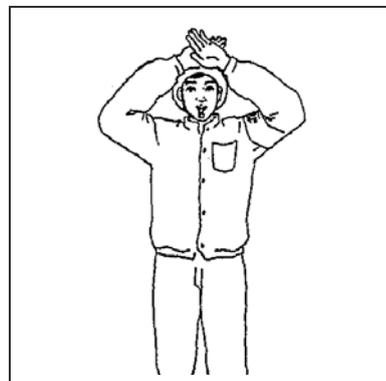
- q) Stop
Arm extended, palm down, and move the arm back and forth horizontally.



- r) Emergency stop
Both arms extended, palms down, move arms back and forth horizontally.



- s) End a movement
Cross your hands in front of your forehead.



ZOOMLION

Truck Crane Operator'S Manual

Chapter 3 Operation – Crane Chassis



Chapter 3 Operation – Crane Chassis

3.1 Driver's cab

3.1.1 Overall view

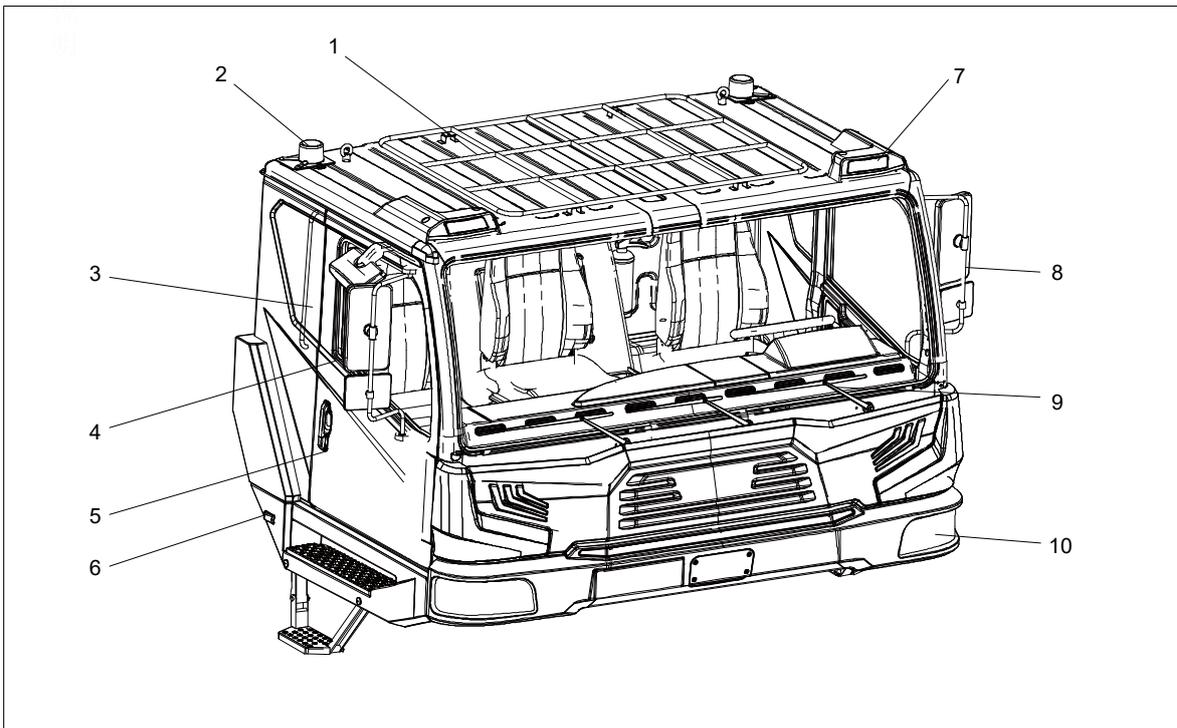


Figure 3-1 Cab exterior

Pos.	Description	Pos.	Description
1	Wire rope holder	6	Side turn signal
2	Rotating beacon (optional)	7	Corner marker light
3	Handrail	8	Mirror (L)
4	Mirrors (R)	9	Front windshield wiper
5	Door handle	10	Front combination signals

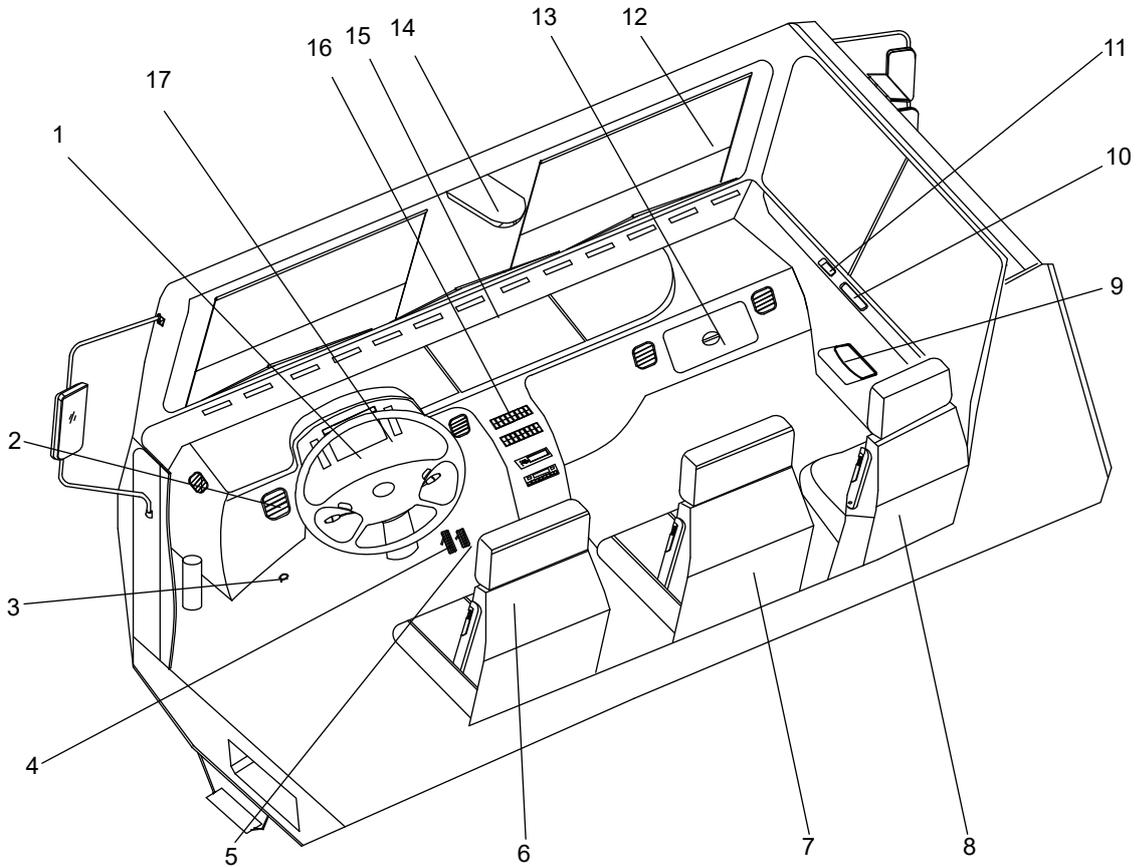


Figure 3-2 Cab interior

Pos.	Description	Pos.	Description
1	Display	10	Inside door switch
2	Outlet nozzle	11	Inside door handle
3	Air horn button	12	Sun visor
4	Foot pedal (L): Service brake	13	Fuse box
5	Foot pedal (R): Engine control	14	LCD display
6	Driver's seat	15	Toolbox
7	Passenger's seat	16	Center console
8	Co-driver's seat	17	Steering wheel
9	Glove compartment		

3.1.2 Steering wheel assy.

Refer to Figure 3-3.

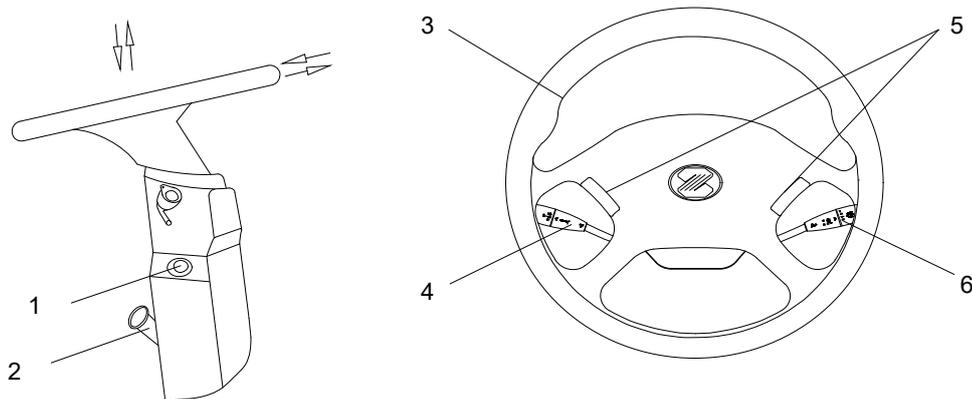


Figure 3-3 Steering wheel assy.

Pos.	Description	Pos.	Description
1	Ignition starter switch	4	Left-hand steering column switch
2	Steering wheel adjustment rotary knob	5	Electric horn buttons
3	Steering wheel	6	Right-hand steering column switch

3.1.2.1 Steering wheel adjustment handle

The angle and height of the steering wheel can be adjusted to suit the driver.

You can adjust the height and angle of the steering wheel when you turn the adjustment rotary knob on the steering column.



- (1) **DO NOT** adjust the steering wheel while you move the crane. This can kill you.
- (2) Turn the rotary knob to lock the steering wheel after adjustment.

3.1.2.2 Left-hand steering column switch

Refer to Figure 3-4.

- a) Turn signal activation (left / right)
 - Jog steering column switch forwards (in direction 1): activate turn signal (right).
 - Jog steering column switch backwards (in direction 3): activate turn signal (left).
- b) Switch between the low beam and high beam and operate the headlamp flasher
 - Jog the switch upwards (in direction 2) to turn on the high beam and headlamp.
 - Jog the switch upwards and downwards continuously to operate headlamp flasher.
 - No matter what working conditions other lamps are in, raise the steering column switch toward your direction, and the high beam will light up.
- c) Hazard light switch
 - Press the “ \triangle ” marking (in radial direction 4) at the end of steering column switch to activate the left and right turn signals simultaneously in order to realize danger warning function. Press it again to reset.
- d) Switch on lighting
 - Rotate the end of the steering column switch to the $\equiv \bigcirc \equiv$ position to activate the front width lamp, rear width lamp, corner marker light, license plate lamp, operating instrument lamp and side marker light.
 - Rotate the end of the steering column switch to the $\equiv \bigcirc$ position to activate the high beam or low beam.
- e) Switch on high beam
 - Jog steering column switch leftwards (in direction 5): activate high beam.

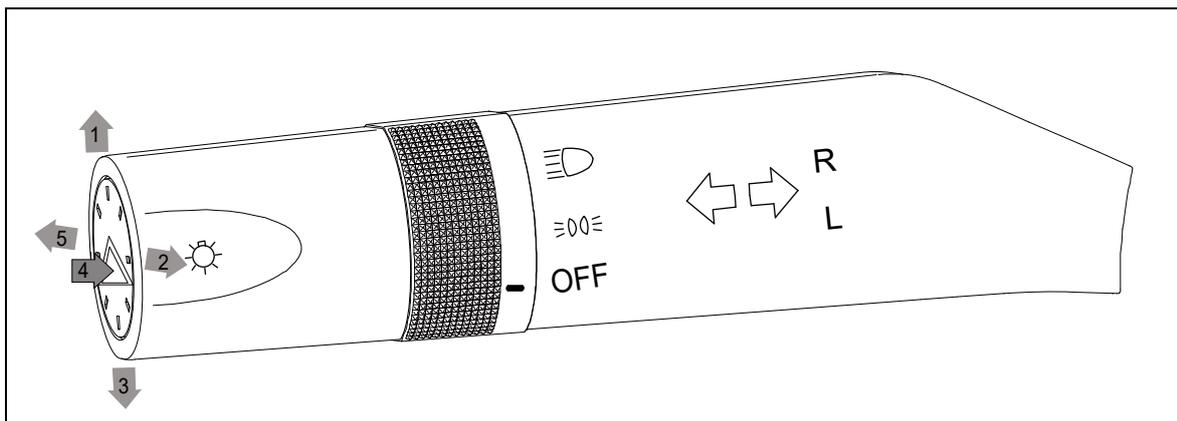


Figure 3-4 Left-hand steering column switch

3.1.2.3 Right-hand steering column switch

Refer to Figure 3-5.

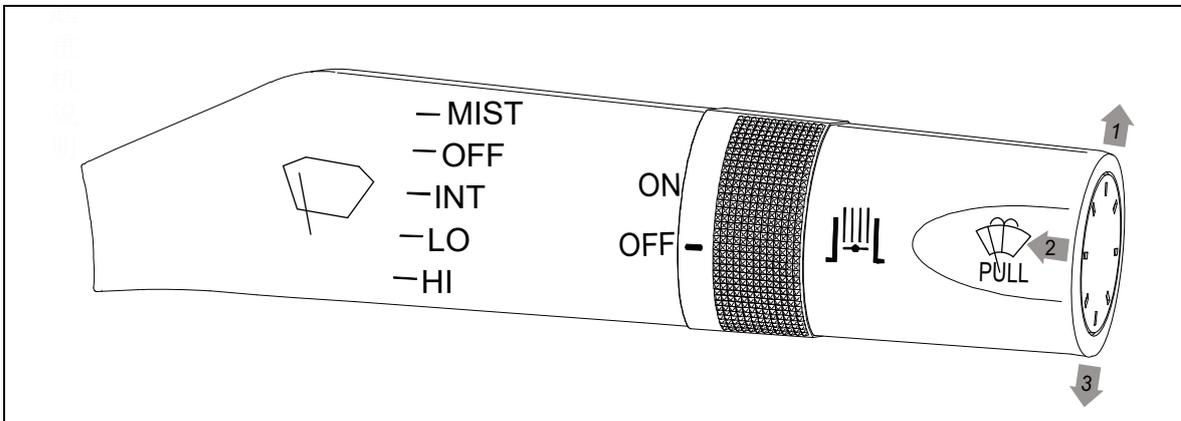


Figure 3-5 Right-hand steering column switch

- a) Activate the windshield wiper
- Jog steering column switch forwards (in direction 1, MIST): activate the windshield wiper and automatically reset.
- Jog steering column switch backwards (in direction 3): realize 4 stages of windshield wiper.
- HI: High speed
- LO: Low speed
- INT: Intermittent
- OFF: Off
- b) Activate the windshield wiper washer system
- Jog steering column switch (in direction 2). The washer and wiper begin to work. They will not stop working until the button is released.



Do not operate the wipers on hot sunny days unless you use spray the window with wiper fluid. When the temperature is below freezing, add the low temperature windshield washer fluid to make sure that the wiper blades are not stuck to the window before you set the wipers to ON.

- c) Activate the engine auxiliary brake
- Rotate the end of the steering column switch to position "ON" to activate the in-cylinder brake system.
- Rotate the end of the steering column switch to position "OFF" to deactivate the in-cylinder brake system.

 **CAUTION**

You can depress the engine control pedal to deactivate the engine auxiliary brake temporarily. The engine auxiliary brake will continue its work after you release the pedal.

When the engine RPM is below 1100 rpm, the engine auxiliary brake will be deactivated automatically. The in-cylinder brake system is deactivated when ABS system works.

3.1.2.4 Electric horn buttons

They are in the central area of the steering wheel. Press either of the two buttons on the left or right side of the central area to activate the electric horn.

3.1.2.5 Ignition starter switch

The 4 positions of the switch in clockwise direction are as follows:

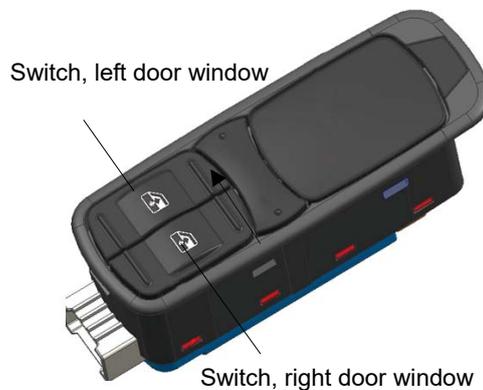
- LOCK** All circuits are OFF. You can plug in or pull out the key.
- ACC** The battery begins to supply electricity and parts of the electrical system begin to work.
- ON** The entire electrical system is electrified.
- S** A temporary position, use it to operate the starter. The key will return to the "ON" position automatically after being released when the engine starts.

 **CAUTION**

You cannot remove the key from the ignition until the switch is in the "LOCK" position.

3.1.2.6 Power windows

- a) Controls beside driver
- 1) Switch, left door window
Press it forwards:
Door windows manually rise.
Press it backwards:
There are two shifts.
Shift 1: door windows manually descend.
Shift 2: door windows automatically descend.
 - 2) Switch, right door window
Press it forwards:
Door windows manually rise.
Press it backwards:
Door windows manually descend.
- b) Controls beside co-driver
- Switch, right door window
- Press it forwards:
Door windows manually rise.
- Press it backwards:
Door windows manually descend.



3.1.3 General operating instruments

3.1.3.1 Instrument panel assy.

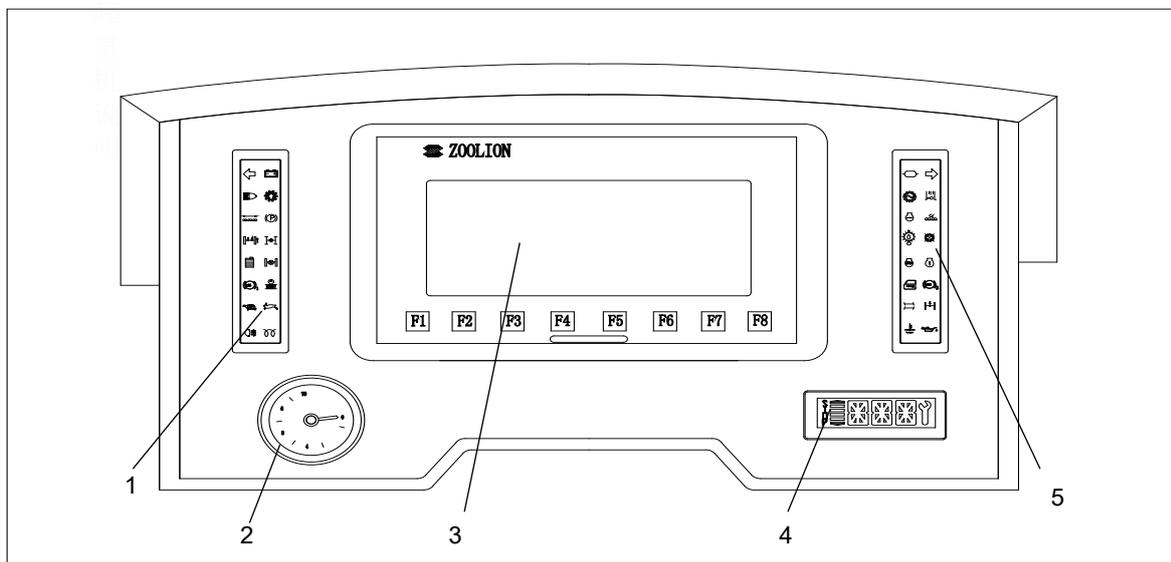


Figure 3-6 Instrument panel assy.

Pos.	Description	Pos.	Description
1	Display unit 1	4	FAST transmission diagnosis display
2	Barometer	5	Display unit 2
3	Monitor		

3.1.3.1.1 Display unit 1

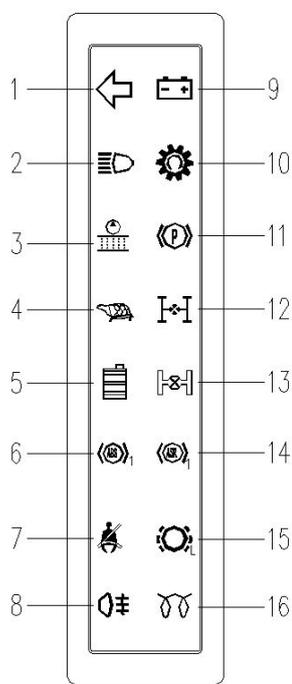


Figure 3-7 Display unit 1

Pos.	Description	Pos.	Description
1	Control light Vehicle direction of travel left	9	Warning light Charge monitoring
2	Control light High beam	10	Control light (Not used) PTO engaged
3	Warning light Filter soiled	11	Control light Parking brake closed
4	Control light (Not used) Off-road travel state	12	Warning light Longitudinal differential lock
5	Warning light Engine coolant level low	13	Control light Transversal differential lock
6	Warning light ABS ₁ defects	14	Control light (Not used) 1#ASR flash code
7	Warning light Seat belt of the driver	15	Warning light Left brake block wear
8	Control light Rear fog lamp	16	Control light Diesel engine preheating system

! CAUTION

Control lights 4, 10 and 14 are NOT USED in this crane.

- 1) **Control light**
Vehicle direction of travel left
Illuminates:
 The vehicle is to turn left.

- 2) **Control light**
High beam
Illuminates:
 The high beam or headlamp flasher is ON.

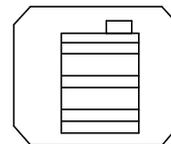
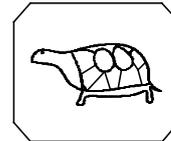
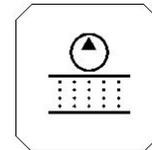
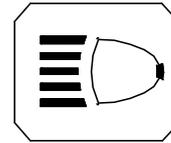
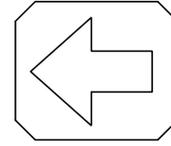
- 3) **Warning light**
Filter soiled
Illuminates:
 The filter is soiled.

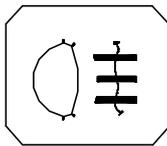
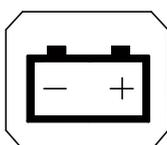
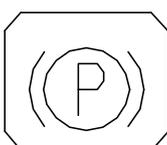
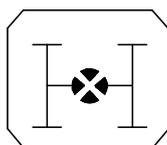
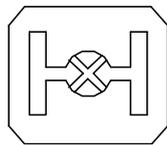
- 4) **Control light (Not used)**
Off-road travel state
Note:
 This vehicle doesn't have the off-road travel mode.

- 5) **Warning light**
Engine coolant level low
Illuminates:
 Engine coolant level in the expansion tank is low.
 Under this condition, add coolant in time.

- 6) **Warning light**
ABS₁ defects
Illuminates:
 The ABS₁ has a malfunction.

- 7) **Warning light**
Seat belt of the driver
Illuminates:
 The driver doesn't wear the seat belt. And the buzzer will sound.



- | | |
|---|---|
| <p>8) Control light
 Rear fog lamp
 Illuminates:
 The rear fog lamp is ON.</p> |  |
| <p>9) Warning light
 Charge monitoring
 Illuminates:
 The ignition starter switch is in position ON.
 Extinguishes after engine starts:
 The generator begins to charge the battery.</p> |  |
| <p>10) Control light (Not used)
 PTO engaged</p> |  |
| <p>11) Warning light
 Parking brake closed
 Illuminates:
 The parking brake is closed.
 Note:
 Do not start the vehicle until the parking brake is released and the control light extinguishes.</p> |  |
| <p>12) Control light
 Longitudinal differential lock
 Illuminates:
 The longitudinal differential lock is activated and locked.</p> |  |
| <p>13) Control light
 Transversal differential lock
 Illuminates:
 The transversal differential lock is activated and locked.</p> |  |
| <p>14) Control light
 1#ASR flash code</p> |  |

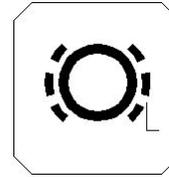
15) Warning light

Left brake block wear

Illuminates:

The left brake block wear of the vehicle exceeds a certain limit.

It reminds you to replace the brake block.



16) Control light

Diesel engine preheating system

Note:

In winter (the engine coolant temperature below -4°C), preheat the engine before vehicle start up.

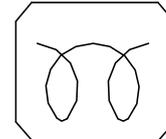
Turn the key to ON position.

Illuminates:

Preheat the engine.

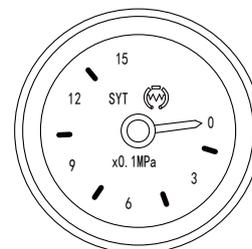
Extinguishes after about 20 sec.:

You can start the engine.



3.1.3.1.2 Barometer

The two pointers resp. display the pressure of main brake air reservoir for the front axle and the pressure of main brake air reservoir for the intermediate and rear axles.



If the air pressure is less than 0.55 MPa, the warning light "Brake pressure low" will illuminate and the buzzer will send out alarm. Risk of danger if start off at this time!

3.1.3.1.3 Monitor

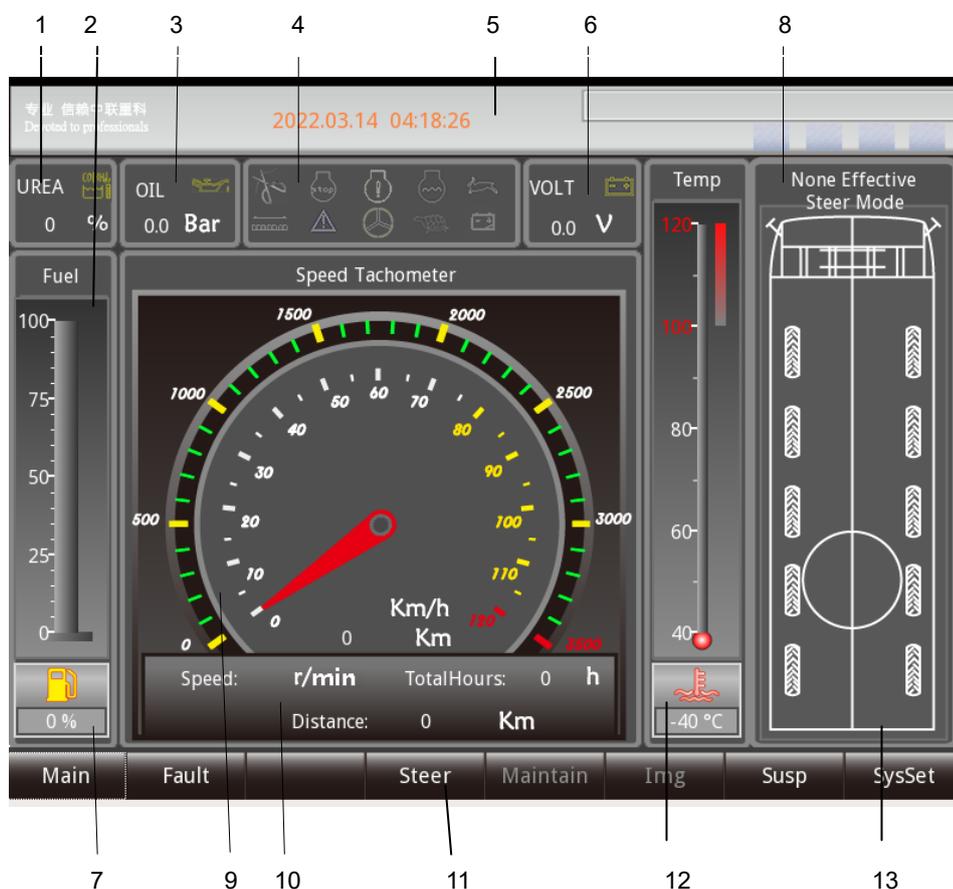


Figure 3-8 Main screen

Pos.	Description	Pos.	Description
1	AdBlue level	8	Current steering mode
2	Fuel reserve	9	Tachometer and odometer
3	Engine oil pressure	10	Engine working hour and driving distance
4	Display unit	11	Function keys
5	Current date and time	12	Engine coolant temperature
6	Battery voltage	13	Axle steering monitoring
7	Oil level		

1) **AdBlue level**

Displays, as a percent full, the amount of AdBlue in the AdBlue tank.



2) Fuel reserve

After you switch the ignition starter switch position ON:

The red bar shows the fuel reserve, 0 to 1.

The percentage figure on the bottom shows exact fuel reserve.



3) Engine oil pressure

Display of current engine oil pressure after engine starts.

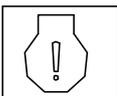


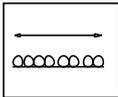
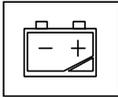
4) Display unit

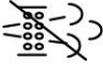
Display of the short circuit / broken circuit, suspension status (leveled or unlevelled), steering sensor status and steering status etc.

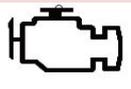


Table 3-1 Display unit

Symbol	Description & Function
	<p>Warning light Short circuit / broken circuit Shows the suspension system or steering system has short circuit / broken circuit.</p>
	<p>Warning light Engine stop owing to serious engine defects Shows the engine shuts down owing to serious engine defects. Do not start off until rectify it.</p>
	<p>Warning light Engine defects Shows the engine has a malfunction. Bring the vehicle to a standstill and rectify it. The display unit 2 also has this control light.</p>
	<p>Warning light Engine oil level low Shows the engine oil level is low. The display unit 2 also has this control light.</p>

Symbol	Description & Function
	<p>Control light PTO</p> <p>The PTO is engaged when this control light illuminates. Do not move the superstructure until this control light illuminates.</p>
	<p>Control light Entire vehicle leveled</p> <p>Shows the entire vehicle is leveled. This control light goes off after the button "Automatic level control" is in the original position.</p>
	<p>Warning light Steering angle sensor defects</p> <p>Shows there is a serious sensor error (buzzer sounds at the same time). Sensors for steering angles of axles 1, 4 and 5 are defective. The screen will be automatically switched to the screen of "Error contents".</p> <p>Bring the vehicle to a standstill, and rectify it immediately.</p>
	<p>Warning light Steering system defects</p> <p>Shows the steering system has a malfunction (buzzer sounds at the same time). Differences between the target steering angles and the actual steering angles for axles 4 and 5 are extremely large.</p> <p>Bring the vehicle to a standstill, and rectify it immediately.</p>
	<p>Warning light (Not used) Overspeed</p> <p>Shows the current vehicle speed exceeds a certain vehicle speed during traveling.</p>
	<p>Warning light Battery voltage low</p> <p>Shows the battery voltage is low. Charge the battery immediately if it is below 21 V.</p>
	<p>Control light Diesel engine preheating system</p> <p>ECU inducts the ambient temperature according to the temperature sensor on the engine. Moreover, ECU automatically controls the work of the air-inlet grille via the air intake heating relay. And thus, ECU controls this control light.</p>

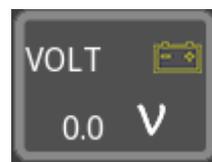
Symbol	Description & Function
	<p>Control light DPF regeneration prohibited Illuminates (stay light in red): It reminds the user of DPF regeneration prohibited when the regeneration prohibited switch is pressed. This control light will be off when the regeneration prohibited switch is pressed twice. The regeneration function recover.</p>
	<p>Control light DPF regeneration Stay illuminates in yellow: It indicates that the vehicle is in the process of regeneration. Flashes in yellow: It needs parking regeneration. It reminds the driver that park the vehicle in a safe place as soon as possible and press the DPF regeneration switch to regenerate. Stay illuminates in red: It reminds the driver that drive the vehicle to the service station to perform DPF regeneration operation.</p>
	<p>Control light In-cylinder braking Illuminates: The engine in-cylinder braking works after the in-cylinder brake switch is pressed.</p>
	<p>Control light (Yellow) NCD Stay illuminates: The driver warning system has been activated due to the other faults. Flashes: The AdBlue level is low.</p>
	<p>Control light (Red) NCD Stay illuminates: The primary driving performance limit is activated, namely the torque is limited to 75%. Flashes: The serious driving performance limit is activated, namely the vehicle speed is limited to 20 km/h. It reminds you of the engine fault. Rectify the fault and then start the</p>

Symbol	Description & Function
	engine.
	<p>Control light OBD</p> <p>Illuminates: The engine postprocessor has a fault.</p>
	<p>Warning light Water in fuel</p> <p>Illuminates: The water in the cup of the fuel coarse filter exceeds the upper limit. Drain the accumulated water in the cup as soon as possible. And maintain the coarse filter right now.</p>

5) **Current date and time**
Display of current date and time

2012-12-27 09:02

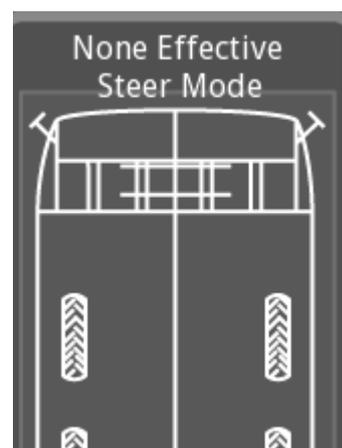
6) **Battery voltage**
Display of the current battery voltage of complete vehicle



7) **State display**
Some state prompts are shown in a form of the text.



8) **Current steering mode**
Display of the current steering mode
The driver can judge whether the required steering mode is selected.



9) Tachometer and odometer

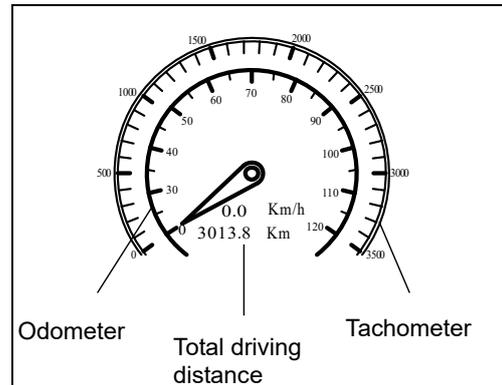
Odometer

Displays the speed of the crane in kilometers per hour (km/h) when the crane is moving and displays its total driving distance, which can be used as a reference for vehicle's maintenance intervals

Tachometer

Displays engine speed (RPM) and equipment operating time.

The pointer should be in the green region during vehicle driving. Do not let the pointer stay in the red region for a long time during engine running, which would result in engine damage.



10) Engine working hour and driving distance

Display of the current engine RPM, total working hours and single driving distance, which can be used as a reference for maintenance intervals of the vehicle

How to delete the single distance
Press "Distance" and then "Yes"



11) Function keys

- F1** Main screen
- F2** Fault diagnosis
- F3** Fuel
- F4** Steer
- F5** Maintenance
- F6** Power Take
- F7** Suspension
- F8** System set



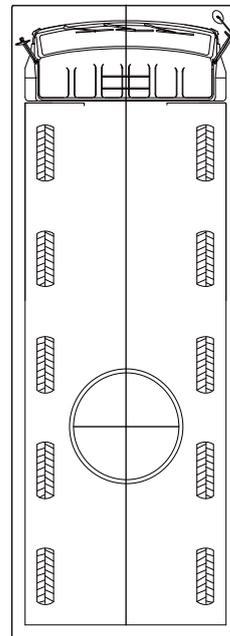
12) Engine coolant temperature

Displays the engine coolant temperature in degrees Celsius (C°) when you turn the ignition starter switch to position "ON". The exact temperature is shown on the bottom numerically.



13) Axle steering monitoring

Display of the steering angle and direction for axles 1 – 5 in the form of animation. The driver can observe whether the current vehicle steering is normal.



3.1.3.1.4 FAST transmission diagnosis display

The information and error codes of the transmission will be displayed on diagnosis display. For detailed information, refer to section 3.3.4.



3.1.3.1.5 Display unit 2

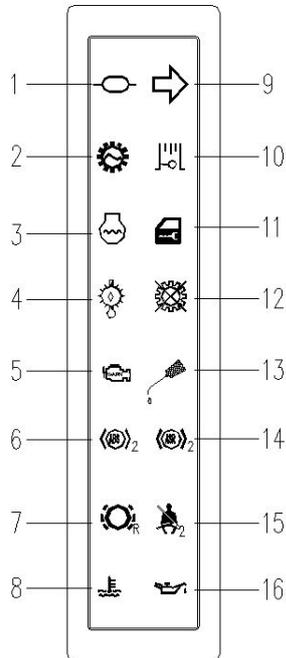


Figure 3-9 Display unit 2

Pos.	Description	Pos.	Description
1	Warning light Brake pressure low	9	Control light Vehicle direction of travel right
2	Control light (Not used) Transmission interarder active	10	Control light Retarder active
3	Warning light (Not used) Engine oil level low	11	Warning light Door opened
4	Warning light (Not used) Transmission oil temperature high	12	Warning light (Not used) Transmission defects
5	Warning light (Not used) Engine malfunction	13	Control light (Not used) Central lubricating system
6	Warning light 2#ABS fault	14	Control light (Not used) 2#ASR flash code
7	Warning light Right brake block wear	15	Warning light Seat belt of the co-driver
8	Warning light (Not used) Engine coolant temperature high	16	Warning light (Not used) Oil pressure low

1) **Warning light**

Brake pressure low

Illuminates:

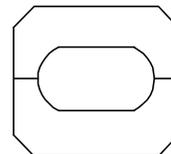
Brake pressure is low.

Extinguishes:

Brake pressure increases to the specified value.

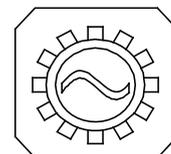


Do not drive the vehicle if the warning light lights up!



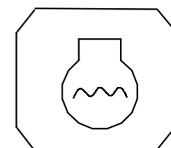
2) **Control light (Not used)**

Transmission interarder active



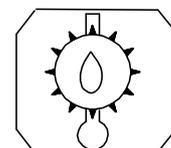
3) **Warning light (Not used)**

Engine oil level low



4) **Warning light (Not used)**

Transmission oil temperature high



5) **Warning light (Not used)**

Engine defects

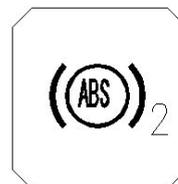


6) **Warning light**

2#ABS fault

Illuminates:

ABS fails.



7) **Warning light**

Right brake block wear

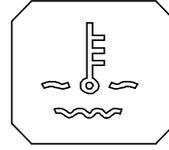
Illuminates:

The right brake block wear of the vehicle exceeds a certain limit.

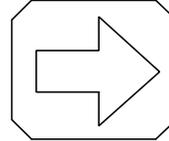
It reminds you to replace the brake block.



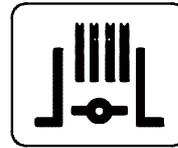
- 8) **Warning light (Not used)**
Engine coolant temperature high



- 9) **Control light**
Vehicle direction of travel right
Illuminates:
 The vehicle is to turn right.



- 10) **Control light**
Retarder active
Illuminates:
 The engine compression brake and the in-cylinder brake work.

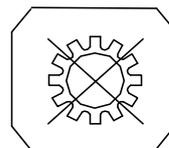


- 11) **Warning light**
Door opened
Illuminates:
 The door is opened.

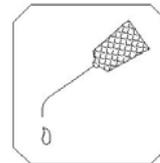


It is very dangerous to drive the vehicle with the door opened. Stop the vehicle and examine the doors if this light lights up!

- 12) **Warning light (Not used)**
Transmission defects



- 13) **Control light**
Central lubricating system



- 14) **Control light**
2#ASR flash code



15) Warning light

Seat belt of the co-driver

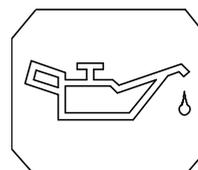
Illuminates:

The co-driver doesn't wear the seat belt. And the buzzer will sound.



16) Warning light (Not used)

Oil pressure low



3.1.3.2 Inspection and diagnosis

You can press function key F2 to detect the errors of transmission, engine, ABS, steering system and suspension system, etc. See Figure 3-10.



Figure 3-10 Main screen

Press function key F2 in Figure 3-10 to switch to the following screen. See Figure 3-11.

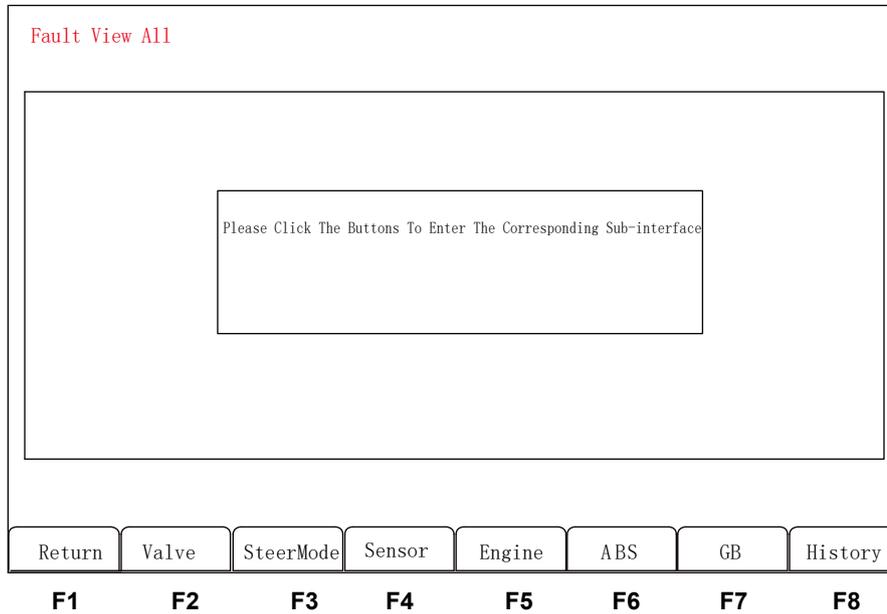


Figure 3-11 Fault view all

Press the corresponding function keys for detailed information about the errors.

For example:

Press function key 5 “Engine” in Figure 3-11.

Result:

- You can view the engine error information.

The detailed information about the diagnosis, please refer to the following sections.

3.1.3.2.1 Engine defects

If the engine has a malfunction, the warning light “Engine defects” lights up and the following screen is automatically displayed. See Figure 3-12.

Press the function key 6 “Detail” you can view the detailed error information and troubleshooting methods for engine control pedal, etc. Rectify the errors according to the instructions.

After the errors are rectified, the information in the screen will disappear. If you want to return to the main screen when the errors are still not rectified, press key “Main”.

3.1.3.2.2 Steering system and sensor defects

If the steering system or steering angle sensor has a malfunction, the following screen is automatically displayed. See Figure 3-14.

The contents highlighted in green are the detailed error information. Rectify the errors according to the instructions.

Press the function key "Return" to return to the main screen.

Troubleshooting:

If the steering angle sensors and oil filter blocker for axles 1, 4 and 5 are defective (The sensors are fitted at the right side of each steering mechanism. The oil filter blocker is fitted at the right rear side of axle 2.):

- Examine the connectors for each sensor for loose connection or examine whether water enters into the connectors.

Note:

- (1) Extremely large deviation for steering angle:

The difference between the target steering angle and actual steering angle of axle 4 is larger than 5° and the difference between the target steering angle and actual steering angle of axle 5 is larger than 7°.

- (2) Faulty steering mode:

After the computer system is switched on, no steering mode is selected & the button is not in the neutral position or buttons of two steering modes are pressed at the same time.



Figure 3-14 Sensor fault view

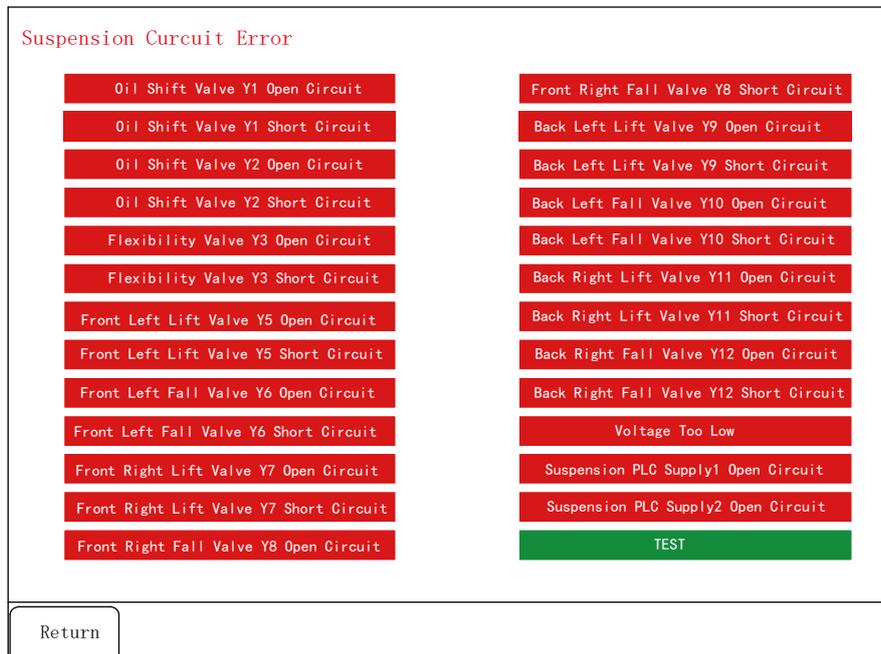


Figure 3-17 Suspension circuitry alarm



Figure 3-18 Steering circuitry alarm 1

3.1.3.2.6 Steering

Press the function key F4 "Steer" in the main screen to switch to the following screen. See Figure 3-19.

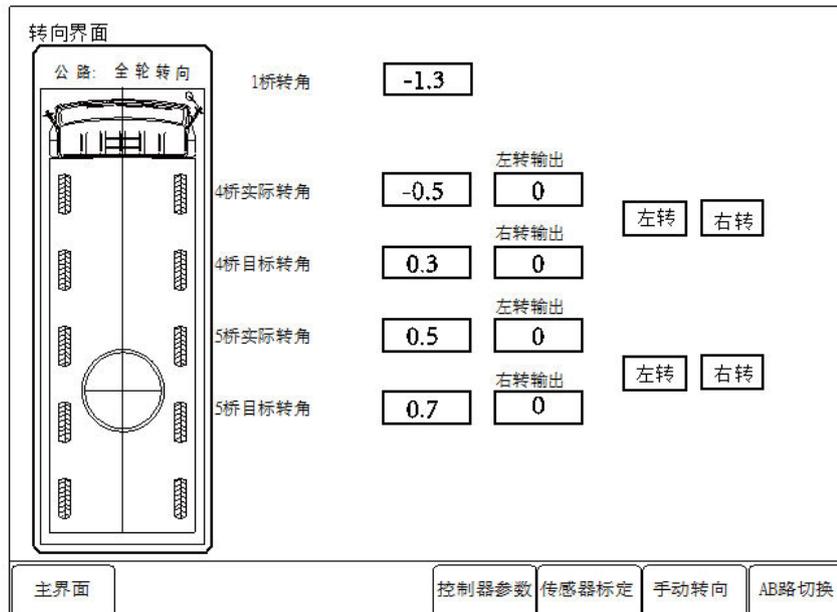


Figure 3-19 Steering

The screen displays:

- the current steering angles of axles 1, 4 and 5
- the target steering angles of axles 4 to 5 calculated according to the current steering angle of axle 1 and the selected steering mode

Note:

The angles of steering to the left are in positive value and the angles of steering to the right are in negative value.

The left part of the screen displays the crane steering condition animatedly.

When the difference between the target steering angle and actual steering angle reaches 0.3°, the icon "Turn left" or "Turn right" illuminates.

Calibrating steering angle sensor to 0°:

How to calibrate:

- Press the function key "Sensor calibration" in Figure 3-19.
- Press icon "Calib" of the axle to be calibrated (Refer to Figure 3-20).

Result:

- The actual steering angle indicates 0°.

Note:

Do not press the key of other axles.

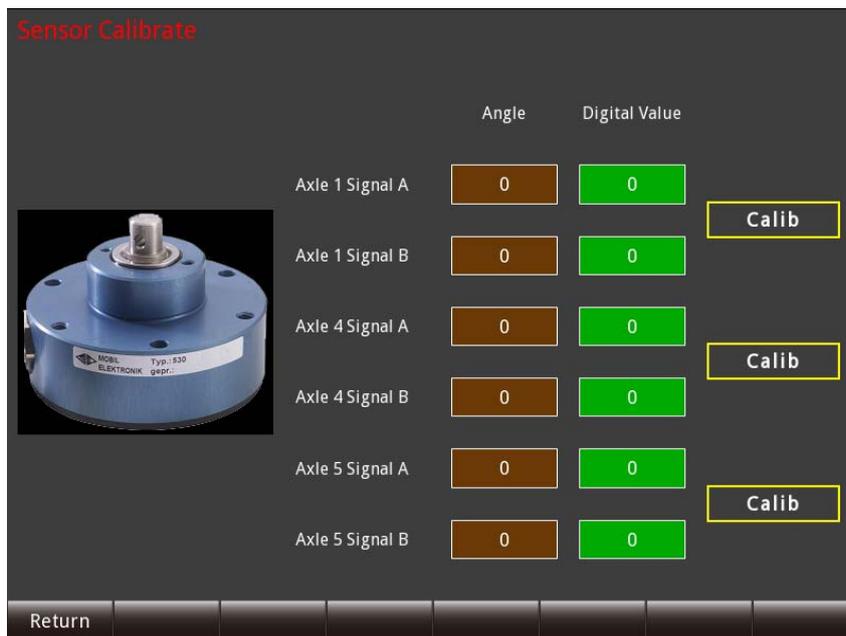


Figure 3-20 Sensor calibration

Manual steering:

Press the function key "Steering" in the steering screen to enter the "Manual steer" screen. Press the icon "Turn left" or "Turn right" to steer the vehicle manually. See Figure 3-21 and Figure 3-22.

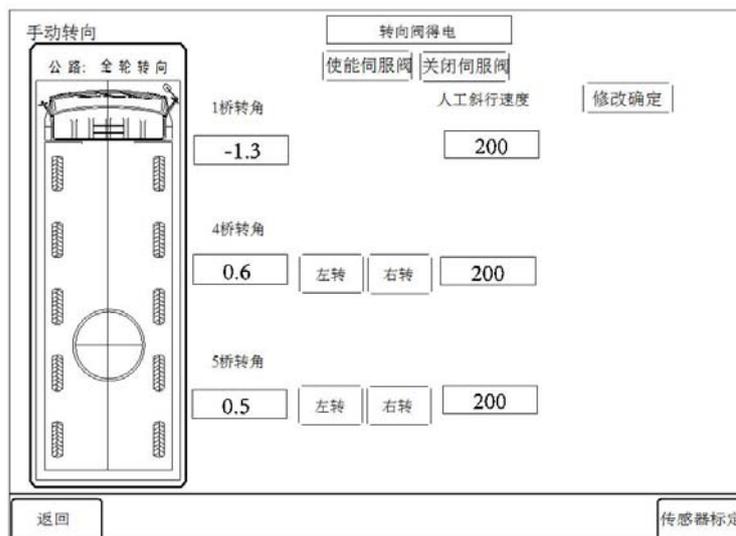


Figure 3-21 Manual steering 1

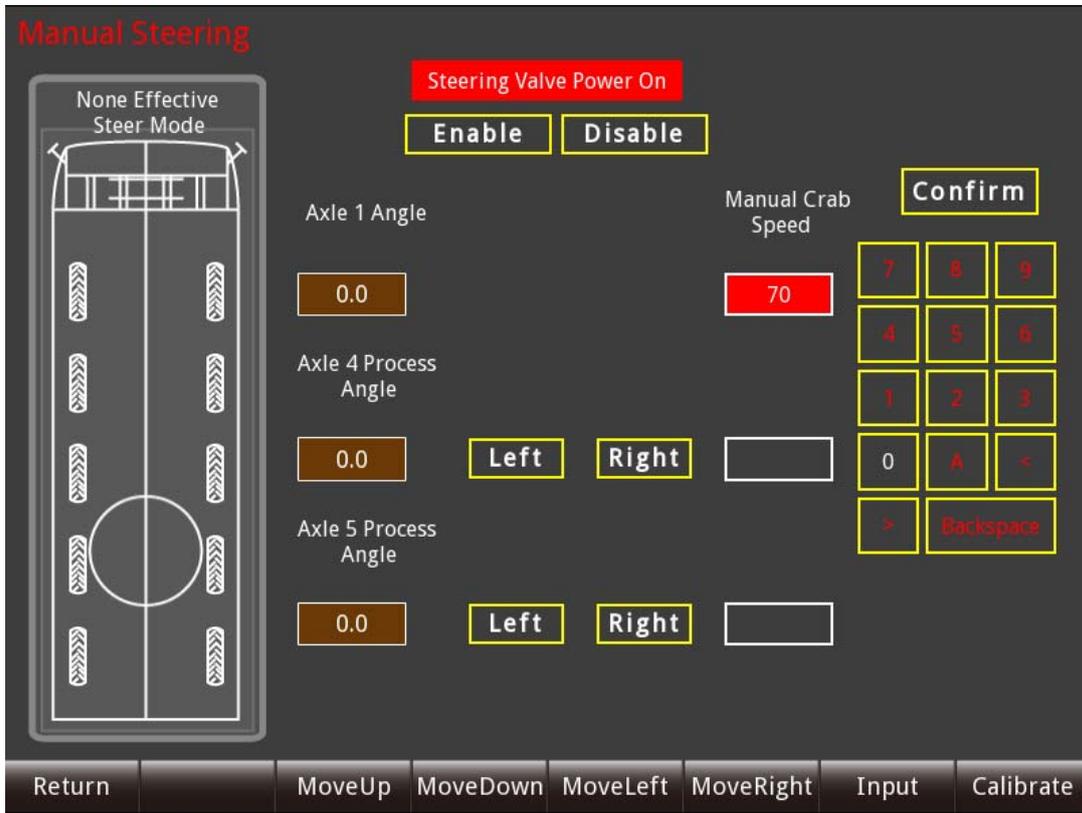


Figure 3-22 Manual steering 2

How to change the steering speed:

Enter the target speed (The larger the value is, the faster the speed is.) and press “Confirm”.

Result:

- The steering speed has been changed.

3.1.3.2.7 Suspension

Press the function key F6 “Suspension” in the main screen to switch to the following screen.

See Figure 3-23.

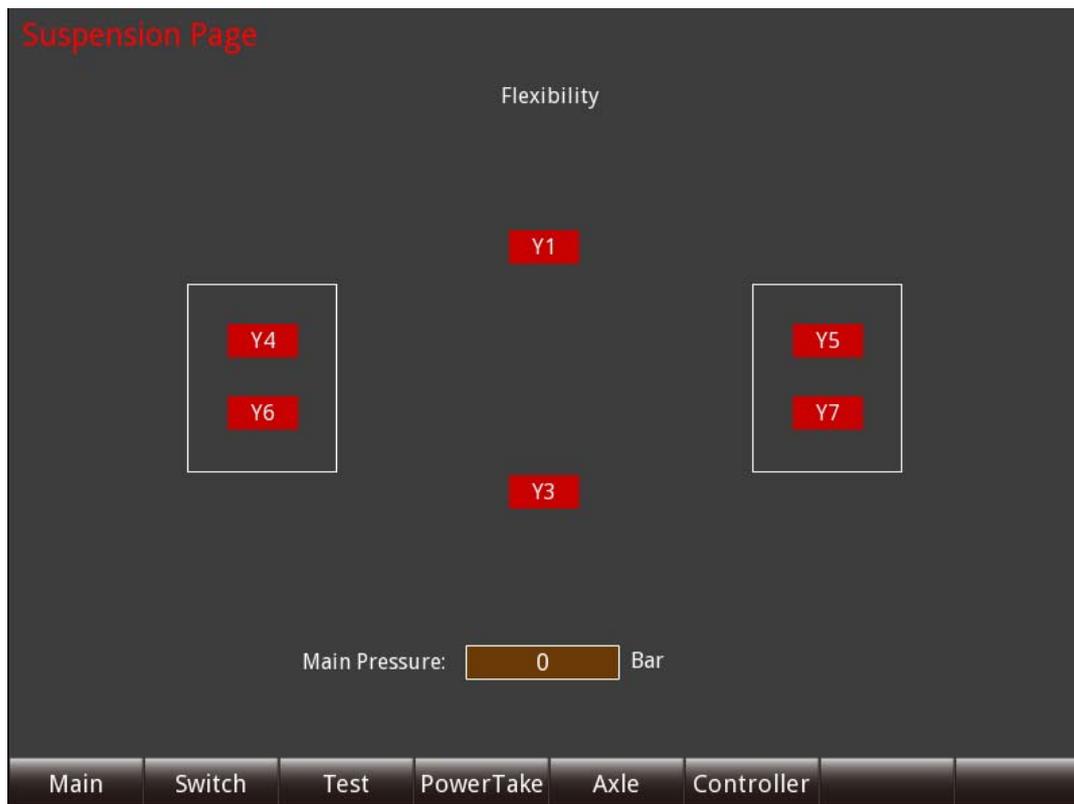


Figure 3-23 Suspension

You can view the items below from the above screen (the green-highlighted one is energized).

- Whether the suspension solenoid valve is energized
- The current suspension control mode.

The operator can judge whether the current suspension control (selected by the button) is valid according to the displayed one. If the two matches, the suspension is valid.

Note:

The button “Locking the axle suspension” is invalid during driving.

If the automatic level control is selected, press function key “Switch” to switch in Figure 3-25.

In the screen, you can observe the working condition of proximity switches on left and right sides of axle 1. Namely the status of proximity switches on chassis frame left front / right front / left rear / right rear.

In the automatic level control:

- The icons “left front cylinder underside sensor”, “right front cylinder underside sensor”, “left rear cylinder underside sensor” and “right rear cylinder underside sensor” should be highlighted in green.
- The icons “left front cylinder upside sensor”, “right front cylinder upside sensor”, “left rear cylinder upside sensor” and “right rear cylinder upside sensor” should be highlighted in red.
- The control light “Entire vehicle leveled” in the main screen of the monitor lights up.

When the crane is lowered to the lowest position, all the icons should be highlighted. When the crane is raised to the highest position, all the icons should not be highlighted. So you can judge whether the proximity switches are damaged or whether you should adjust the mounting clearance of proximity switches. See Figure 3-24.

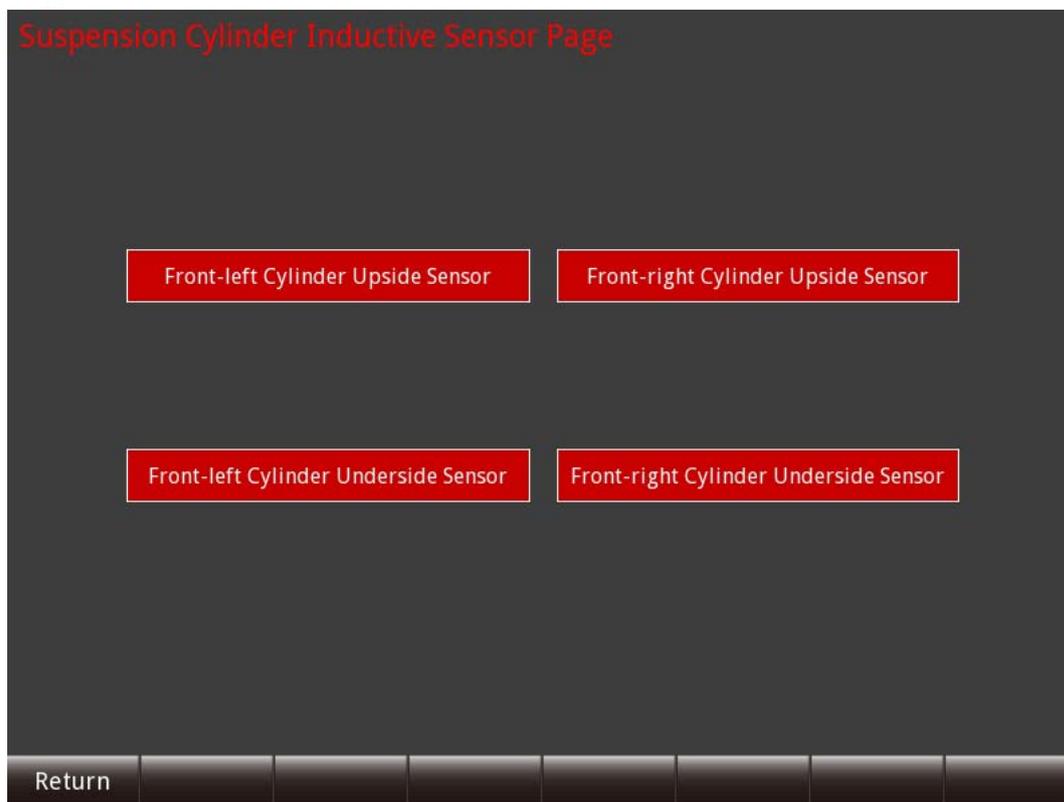


Figure 3-24 Suspension cylinder inductive sensor

Press function key F3 in the Suspension screen to enter the Commissioning screen. You can energize or deenergize the outrigger changeover valve manually. See Figure 3-25.

How to operate:

- Energizing:
Press the icon "Energize the outrigger changeover valve" in the Commissioning screen until the icon "Y1" is highlighted in green.
- Deenergizing:
Press the icon "Deenergize the outrigger changeover valve" in the Commissioning screen until the icon "Y1" is highlighted in red.

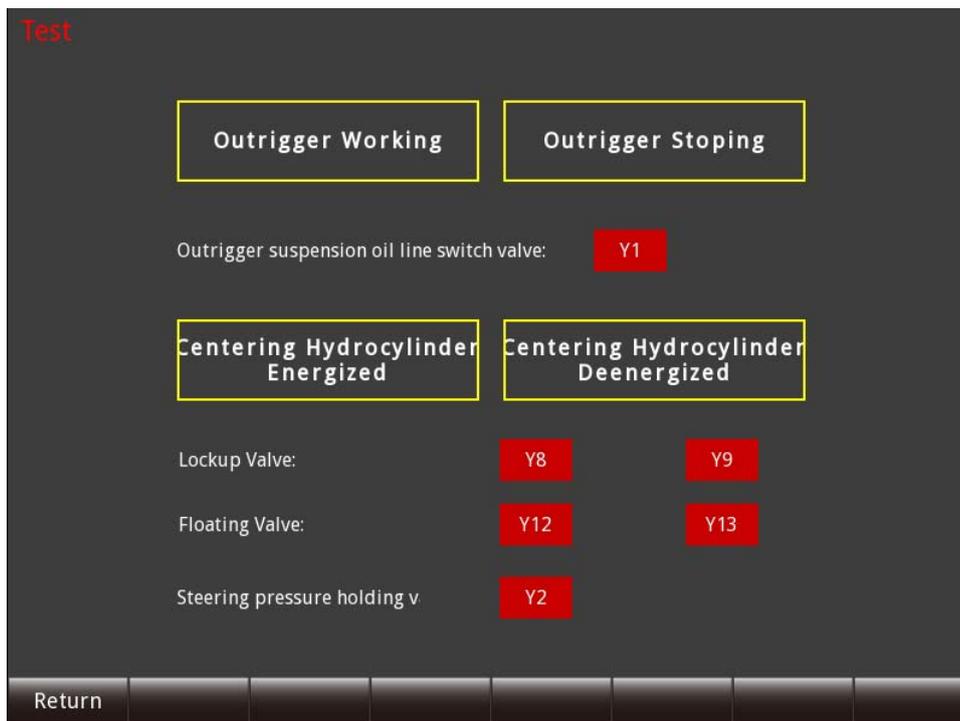


Figure 3-25 Suspension test

3.1.3.2.8 Maintenance

Press function key F5 "Maintain" in the main screen to switch to the the Maintenance screen. See Figure 3-26.

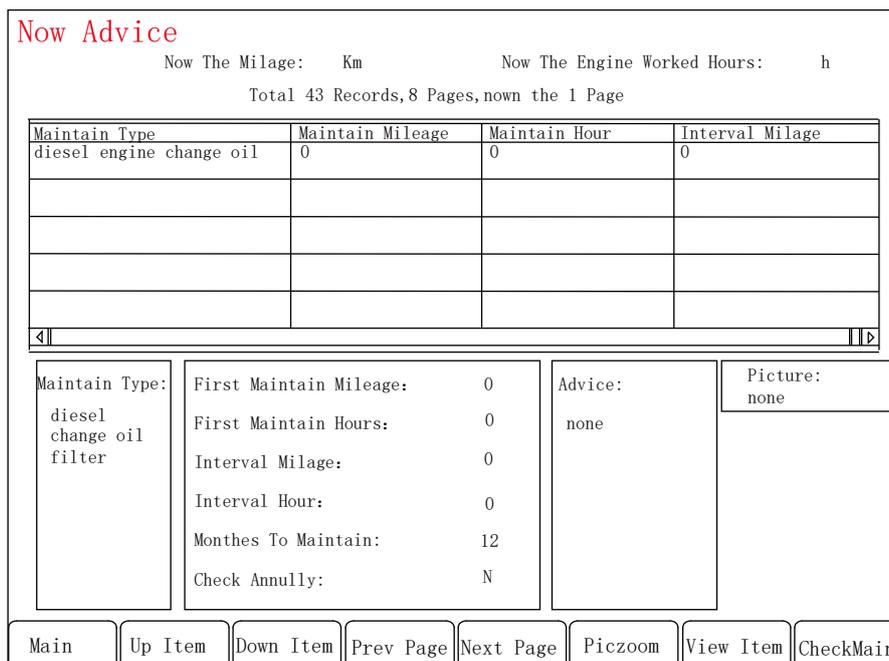


Figure 3-26 Maintenance

3.1.4 Center console

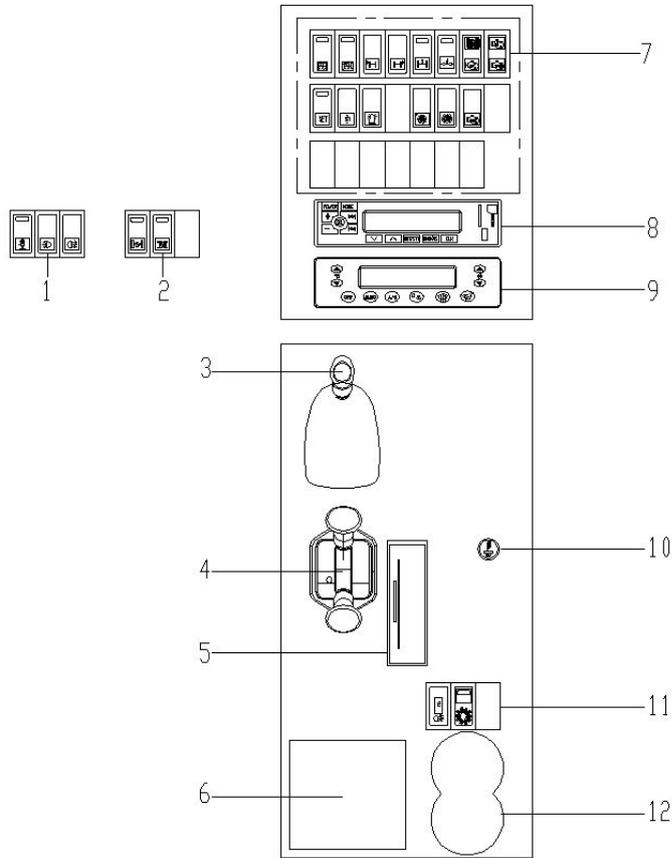


Figure 3-27 Center console

Pos.	Description	Pos.	Description
1	Left-hand buttons	7	Buttons and control lights
2	Right-hand buttons	8	MP3 player
3	Range selector	9	A/C control panel
4	Parking brake hand lever	10	Cigarette lighter
5	Ashtray	11	Rocker switch assy.
6	Storage compartment	12	Cup holder

3.1.4.1 Rocker switch assy.

3.1.4.1.1 Left-hand buttons

1 Button

Outrigger power source

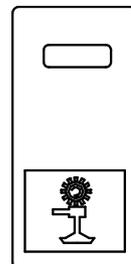
This button is with a lock.

Before activating this button, move the lock downwards.

Pressed:

Outrigger power source is switched on.

Move the lock upwards and press up to switch off the power source before driving.

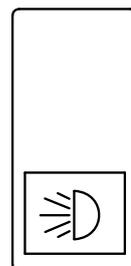


2 Button

Sliding beam illumination

Pressed:

The sliding beam illumination is ON.

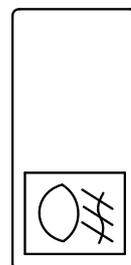


3 Button

Rear fog lamp

Pressed:

The rear fog lamp is ON.



3.1.4.1.2 Right-hand buttons

1 Button

Transversal differential lock

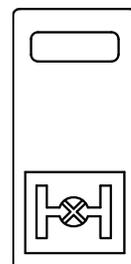
Pressed down:

The transversal differential lock is activated.

Activate this button in off-road driving to prevent wheels from skidding.

Pressed up:

The transversal differential lock is deactivated.



CAUTION

- (1) Only operate the button when the vehicle is stationary. Once it drives on road, press up the button to release the transversal differential lock to avoid axle damage.
- (2) Only add the differential lock when the vehicle is stationary. Do not add the differential lock when the wheels are turning.
- (3) Do not attempt to corner after you add the transversal differential lock.
- (4) Only add the differential lock within the standard transport weight of vehicle.
- (5) Start off at low engine speed.

2 Button

Longitudinal differential lock

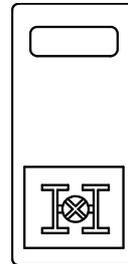
Pressed down:

The longitudinal differential lock is activated.

Activate it in off-road driving to prevent front / rear wheels from skidding.

Pressed up:

The longitudinal differential lock is deactivated.



CAUTION

- (1) Only operate the button when the vehicle is stationary. Once it drives on road, press up the button to release the longitudinal differential lock to avoid axle damage.
- (2) Only add the differential lock when the vehicle is stationary. Do not add the differential lock when the wheels are turning.
- (3) Be cautious when you attempt to corner after you add the longitudinal differential lock.
- (4) Start off at low engine speed.

3.1.4.1.3 Buttons and control lights

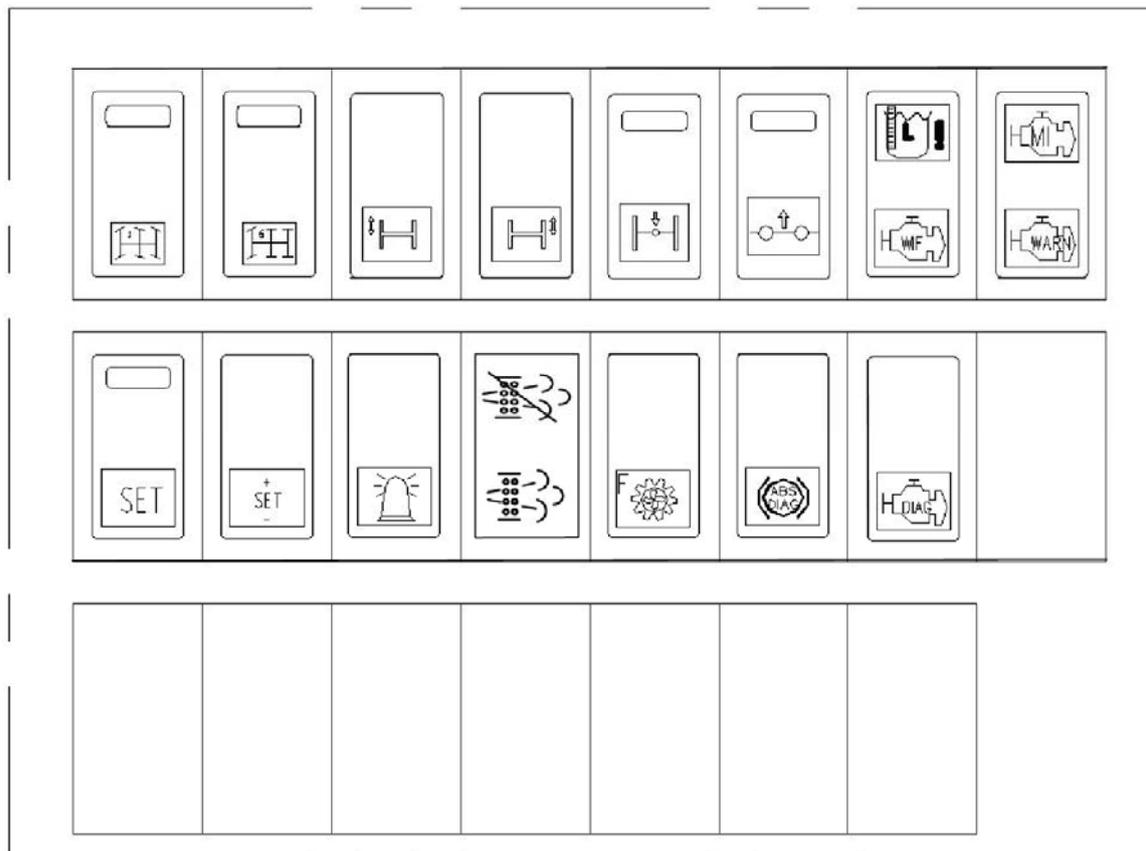


Figure 3-28 Buttons and control lights

1 Button

Switch on “Road steering” operating mode**Pressed down:**

The “Road steering” operating mode is selected.

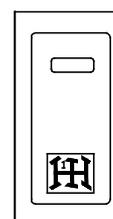
In this mode, the front axles 1 and 2 are mechanically steered by the steering wheel.

The rear axles 4 and 5 are steered depending on the speed and the steering of axle 1.

Steer axles 4 and 5 are steered depending on the steering of the front axles when the vehicle speed is below 30 km/h.

Steer axle 4 is moved back to the 0° position when the speed reaches 30 km/h.

Steer axles 4 and 5 are moved back to the 0° position when the speed reaches 55 km/h.



2 Button

Switch on "Rear axle affixed for straight travel" operating mode

This button is with a lock.

Before you activate this button:

- Move the lock downwards.

Pressed down:

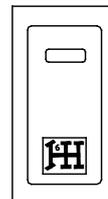
The "Rear axles affixed for straight travel" operating mode is selected.

In the "Rear axles affixed for straight travel" operating mode, only the front axles 1 and 2 are steered by the steering wheel.

The rear axles 3, 4 and 5 are affixed for straight travel.

In this operating mode, turning radius of the front axles is large.

The maximum driving speed is limited to 20 km/h.



3 3-handed button

Vehicle level, raise / lower left front

Pressed up:

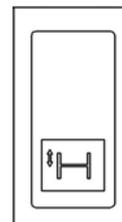
The left front vehicle (axles 1 to 2) level is raised.

Pressed down:

The left front vehicle (axles 1 to 2) level is lowered.

Middle position:

The left front vehicle level (axles 1 to 2) is kept on its original height.



4 3-handed button**Vehicle level, raise / lower right front****Pressed up:**

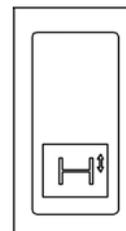
The right front vehicle (axles 1 to 2) level is raised.

Pressed down:

The right front vehicle (axles 1 to 2) level is lowered.

Middle position:

The right front vehicle level (axles 1 to 2) is kept on its original height.

**5 2-handed button****Locking the axle suspension**

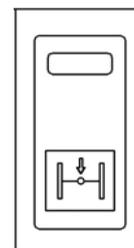
This button is with a lock.

Pressed:

The axle suspensions of axles 1 and 2 are locked.

Released:

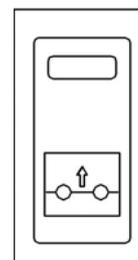
The axle suspension system of axles 1 and 2 has been set to "Sprung".

**6 Button****Automatic level control, axles 1 and 2**

This button is with a lock.

Pressed:

The suspensions of axles 1 and 2 enter into the level mode. After the suspensions are leveled, the level control light on the LCD will illuminate. It indicates that the level is successful. At this time, deactivate this button. And enter into the rigid mode to lock the level state.



7 Warning light / Control light

Hydraulic oil level low / WIF

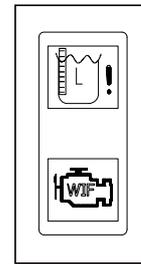
Illuminates (See upper part of the figure on the right):

Hydraulic oil level is lower than the permitted value.

Add the hydraulic oil to the required level.

Illuminates (See lower part of the figure on the right):

When the accumulated water in the water cup of the fuel coarse filter exceeds the upper limit, drain off the accumulated water as soon as possible. And maintain the coarse filter.



8 Warning light

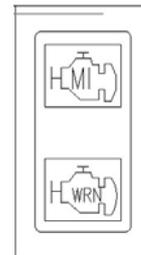
Engine MI / Engine error code displayed

Illuminates:

The engine fails.

Flashes:

The button "Engine fault diagnosis" is pressed.

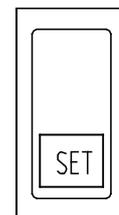


9 Button

Tempomat

Pressed:

Tempomat is active.



CAUTION

- (1) Tempomat refers to driving the vehicle at a constant speed set by ECU without applying engine control. It is usually used in long-distance driving to release the driver's fatigue.
- (2) You can press the button to enter the Tempomat after the following prerequisites are met:
 - The transmission is in the speed 5 and above.
 - The vehicle speed is no less than 30 km/h.
 - The engine RPM is between 650 r/min. and 2100 r/min.
- (3) The engine RPM can be regulated by engine control pedal or SET + or – when the Tempomat is activated.

(4) How to deactivate the Tempomat:

- If the corresponding switches have been engaged into the ECU, you can deactivate the Tempomat by depressing the service brake pedal or activate the in-cylinder brake. After you exit the Tempomat, you can press down the button “Tempomat” to resume the previous driving speed on the condition that the requirements for the Tempomat are still fulfilled.
- You can press up the Tempomat button to deactivate the Tempomat. After that, you cannot activate the Tempomat when you press down the button. You should press up or press down the Tempomat button to activate the Tempomat.
- You can also deactivate the Tempomat by depressing the engine control pedal. For example: under the Tempomat mode, when the driver wants to overtake other cars on the road, he / she can apply the engine control pedal. Once the accelerator signal is detected, the ECU will make a comparison between the Tempomat torque and the pedal torque. The larger one will be used to meet the torque requirements (e.g. overtaking) during cruise control. After you release the engine control pedal, the Tempomat will be resumed automatically.

(5) Points for attention:

- In an emergency, you should do the following operations to reliably deactivate the Tempomat:
 - Depress the service brake pedal.
 - Press up the Tempomat button.
 - Activate the in-cylinder brake.
- The following defects will make the Tempomat invalid:
 - The button “Tempomat” defective
 - Brake switch signal defective
 - Vehicle speed sensor signal defective

(6) Notes:

- Use the Tempomat only when traffic conditions permit a steady speed. It may not be possible to maintain the speed on ascending or descending gradients or in off-road conditions. Otherwise, the Tempomat will be locked because of too large acceleration or deceleration. As a result, you can only resume the Tempomat by resetting the ECU.
- The requirements for the Tempomat are rigorous. If the Tempomat cannot be activated, you should examine the button for functional work.

10 Button

Tempest

Pressed:

Temposet is activated.

- Press SET + or – one time.

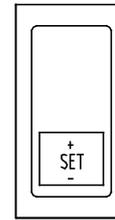
Result:

The speed is increased / decreased by 2 km/h.

- Press and hold + or –

Result:

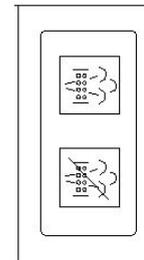
The speed is continuously increased / decreased by 1.5 km/h.



11 Buttons

DPF regeneration / DPF regeneration prohibited

After the control light “DPF regeneration” illuminates, press the upper part of the switch “DPF regeneration”, and the engine performs the regeneration function. When the lower part of the switch “DPF regeneration prohibited” is pressed, the regeneration function is prohibited. The control light “DPF regeneration prohibited” illuminates. Press the lower part of the switch “DPF regeneration prohibited” again, and the regeneration function resumes. And the control light “DPF regeneration prohibited” extinguishes.



12 Button

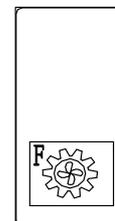
Switch radiator-fan of transfer case ON

Pressed down:

Radiator-fan of transfer case is activated.

Note:

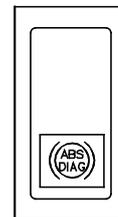
Activate the button during long-distance travel in summer.



13 Information button (diagnostics)

ABS defects

This is an automatic resetting button. Press the button and release, it will be reset automatically. This button is used to carry out diagnosis on the ABS1.



If the button is hold down for 1 to 3 seconds, the error codes will be flashed out after 1.5 seconds.

An error code consists of two parts. The first part of error code will be flashed out 1 to 18 times. And the second part of error code will be flashed out 1 to 15 times. Each part is flashed out every 1.5 seconds. Each code is flashed out every 4.5 seconds. If an error code appears repeatedly, it is "actual error". If different error codes are flashed out and extinguished, they are "stored error".

You can find out the error code in flash code list to confirm the error type (See Section 3.1.3.2.4).

Example of "Actual error code":

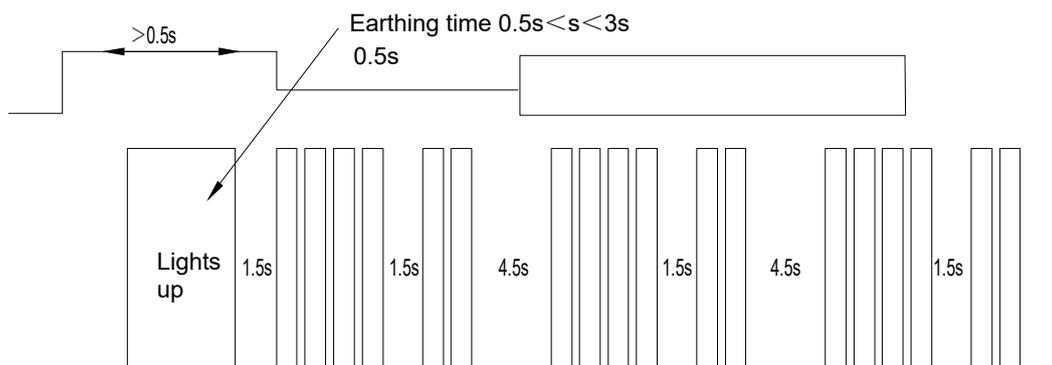


Figure 3-29 Example of ABS error code

If the error code is flashing 4 times continuously and is followed by 2 times flash, it illustrates "actual error" and its code is "4-2". Refer to the above flash code list and the error is "Sensor signal for drive axle left side has been lost during vehicle start up".

You can use the button to delete the errors stored. How delete:

- a) Press the button.
- b) Switch on the power.
- c) Deactivate the button.

Result:

- ECU of ABS has deleted all the stored error codes.

If the fault still cannot be deleted, there is "actual error" existing. Carry out diagnosis to confirm the fault and delete the stored error after rectifying.

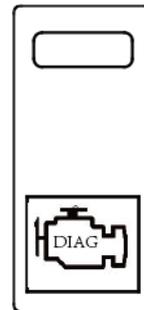
After you read the flash codes, the fault diagnosis screen will appear. Press the ABS error index button to change over to display the Flash Code List. Rectify corresponding errors according to the list.

14 Button

Engine fault diagnosis

Pressed:

The engine enters the engine fault diagnosis mode. If the engine is defective, the control light "Engine error code displayed" will display the engine error code.



When the complete vehicle is not in neutral, the steering angle of axle 1 should be no more than 20 °. Otherwise, the steering mechanism will be damaged.

3.1.4.2 MP3 player

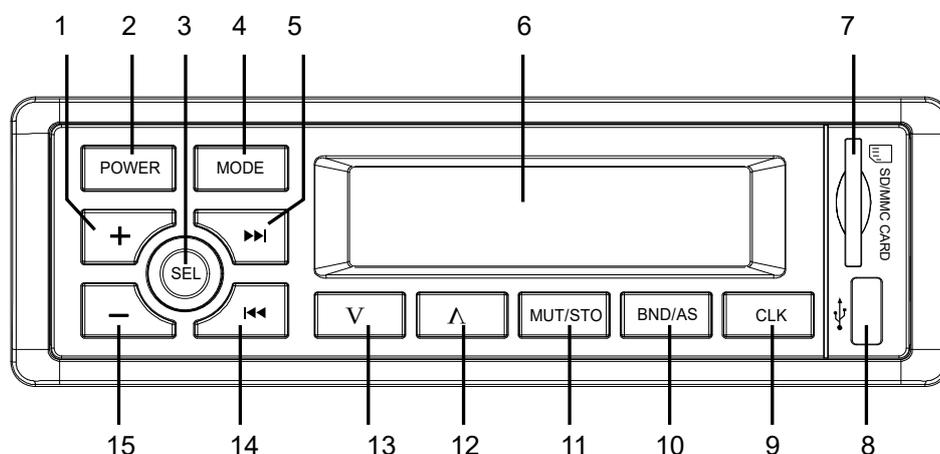


Figure 3-30 MP3 player

Pos.	Description	Instructions
1	VOLUME+	Under the radio mode / USB mode, briefly press this button to increase the volume.
2	POWER	Under the ready mode, briefly press this button to turn on this player. Briefly press this button to turn off this player after this player is on.
3	SEL	Under the radio mode / USB mode, repeatedly press this button to enter into these functions: BAS, TRE, BAL, EQ, LOUD and VOL, namely bass, treble, balance, equalizer, loudness and volume. And then, select the corresponding function by press the button VOLUME+ or VOLUME-.
4	MODE	Pressed: Changeover radio / USB / SD
5	Skip previous (USB mode) / Search previous (Radio mode)	Under radio mode, briefly press this button to search the previous radio stations semi-automatically; press and hold this button to search the previous radio stations manually. Under USB mode, briefly press this button to select the previous songs; press and hold this button to fast forward and play.
6	Display screen	Show the radio frequency and play information.
7	S D slot	This player will automatically play the songs in corresponding formats after the SD card is inserted.
8	USB port	This player will automatically play the songs in corresponding formats after the USB is inserted.
9	CLK	Under radio mode, briefly press this button to enter into the clock set mode. And briefly press this button again to return to its original state.

Pos.	Description	Instructions
		Under the clock set mode, press and hold this button to enter into the clock setting (namely the clock flashes.) and press the button VOLUME+ or VOLUME- to adjust the hour together. And then, briefly press this button to adjust the minute (namely the minute flashes.) and press the button VOLUME+ or VOLUME- to adjust the minute together. After that, briefly press this button again or wait for 5 seconds. Lastly, the system will automatically confirm the clock setting and exits.
10	BND/AS	Under radio mode, briefly press this button to change the bands, namely FM1 – FM2 – FM3 – AM1 – AM2); press and hold this button to search the radio stations automatically and reserve them within each band. After automatic search, the system will stay on the first radio station in current band.
11	MUT/STO	Under the radio mode / USB mode, briefly press this button to enter into the mute mode. And briefly press this button again to cancel the mute mode. Under the radio mode, press and hold this button to force the player into the mono. And press and hold this button again to change into the stereo.
12	Select previous (Radio mode) / Add previous (USB mode)	Under the radio mode, briefly press this button to select the reserved previous radio stations. Under the USB mode, briefly press this button to add previous ten songs.
13	Select next (Radio mode) / Reduce next (USB mode)	Under the radio mode, briefly press this button to select the reserved next radio stations. Under the USB mode, briefly press this button to reduce next ten songs.
14	Skip next(USB mode) / Search next (Radio mode)	Under radio mode, briefly press this button to search the next radio stations semi-automatically; press and hold this button to search the next radio stations manually. Under USB mode, briefly press this button to select the next songs; press and hold this button to fast forward and play.
15	VOLUME-	Under the radio mode / USB mode, briefly press this button to decrease the volume.

CAUTION

- (1) Do not remove the USB stick when the sound files in the stick are playing. Otherwise, the files will be damaged. Remove the stick after you turn off the MP3 player.
- (2) Do not extend the USB cable. Otherwise, the files in the USB stick may not be read because the USB extension cable not provided by the manufacturer may not meet the requirements for the cable length, resistance and signal time-relay stated in the *USB Specification*.
- (3) Set the ignition starter switch to the "ACC" position, when you use the MP3 player with the engine in the "OFF" position.

3.1.4.3 A/C control panel

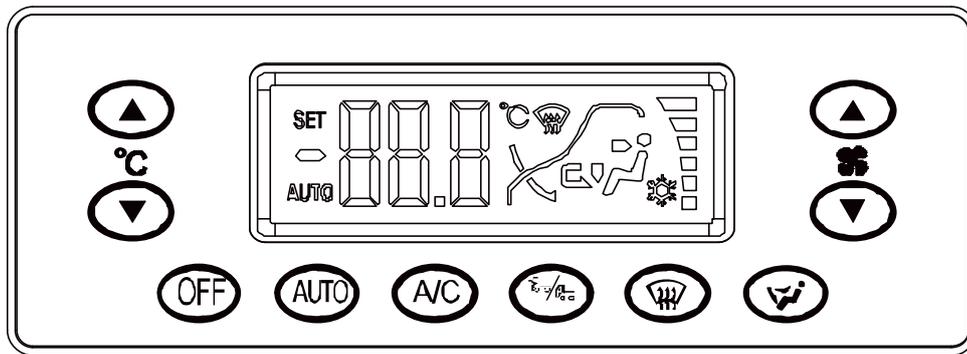


Figure 3-31 A/C control panel

a) Symbol identification

Table 3-2 Symbol identification

Description	Symbol	Description	Symbol
Set	SET	Refrigeration	
Auto	AUTO	1 bar – stage 1	
Temperature		2 bars – stage 2	
Outer air circulation		3 bars – stage 3	
Interior air circulation		4 bars – stage 4	
Footwell air supply		5 bars – stage 5	
Fresh air		6 bars – stage 6	
Front window air supply		Vehicle body	

b) Buttons

Table 3-3 Buttons on the A/C control panel

Function	Button
Temperature adjustment button Pressed: Increase / decrease the temperature.	
Fan speed button Pressed: Increase / decrease the fan speed.	
OFF button Pressed: Turn off the air conditioning system.	
AUTO button Pressed: Activate the auto operating mode.	
A/C button Pressed: The A/C begins to refrigerate.	
Circulation button Pressed: Changeover interior / outer air circulation.	
Defrosting button Pressed: Activate the defrosting mode.	
Mode button Pressed: Changeover different air supply modes.	

Detailed information:

- a) Temperature
 - 1) Interior temperature range: -30.0°C to 80.0°C
 - 2) If the interior temperature sensor is defective, 25.0°C will be displayed and never changed.
- b) Fan speed bar chart
 - 1 bar – stage 1 2 bars – stage 2 3 bars – stage 3
 - 4 bars – stage 4 5 bars – stage 5 6 bars – stage 6
- c) Fan speed button
 - Arrow up – fan speed (blower), faster
 - Arrow down – fan speed (blower), slower
 - If the fan speed button is not activated, arrows up / down are invalid.
 - If the fan speed button is activated, press arrows up / down to increase / decrease the fan speed.
 - If the fan speed is increased / decreased to the highest / lowest stage, arrows up / down will be invalid.
- d) Mode button
 - Changeover front window supply / footwell supply / footwell and defrosting air supply
- e) A/C button
 - The control light illuminates: The compressor activated
 - The control light extinguishes: The compressor deactivated
- f) Temperature adjustment button
 - Temperature range: 17°C to 29°C.
 - Pressed: The temperature is increased or decreased by 1°C between 17°C and 29°C
 - Press and hold this button, the temperature will be continuously increased or decreased.
 - The set temperature will flash and the interior temperature will be displayed after 5 seconds.
 - LO: set temperature below 17°C
 - HI: set temperature above 29°C

The air conditioning system is of diagnosis function.

- a) Press and hold OFF.
- b) The error codes will appear on the display after 10 seconds.
 - C0: Normal
 - C3: The interior temperature sensor uninstalled or defects
 - C5: The evaporator temperature sensor uninstalled or defects
 - C6: Water valve steering gear uninstalled or defects
 - C7: Air door for mode adjustment uninstalled or defects

How to correct the malfunctions:

- For C3 and C5, install or repair the sensor.
- For C6, install or repair the steering gear and then restart the air conditioning system.
- For C7, install or repair the air door and then restart the air conditioning system.



Do not use the cab heater if engine coolant temperature is below 70°C.



- (1) **Make sure that the A/C is in the OFF mode when the engine is OFF or at idle speed for a long time. The battery drains in these conditions.**
- (2) **When you move the crane for a long distance at low speed, with the A/C in the ON mode, put the transmission in a low gear. This increases the engine RPM and decreases the load on the transmission.**
- (3) **Set the A/C to the OFF position when you do one of the items that follow:**
 - **Move the crane quickly.**
 - **Move up a long hill slope.**
- (4) **In winter or other periods without using air conditioning, run the air conditioning for several minutes once a month to benefit the lubricating circulation and make sure the system in good state.**
- (5) **Make sure that the refrigerant in the A/C system is at the correct level at regular intervals.**
- (6) **If there are unusual vibrations, noises or smells during operation, stop and examine the crane immediately. Do not operate the crane that has a malfunction.**
- (7) **Keep the surface of the condenser clean. When you clean the condenser, do not use steam. Clean it with compressed air or cold water.**
- (8) **Do not disassemble the belt or pipeline of compressor when you do not use it for a long time.**
- (9) **In high temperature weather, close the shutoff gate valve on the hot-water pipe of heater at the bottom of driver's cab. Otherwise, refrigeration effect may be affected. In cold weather, open the shutoff gate valve to make hot water enter into the heater. For hot water type heater, engine coolant temperature will affect the interior temperature. If the engine coolant temperature cannot be heated, the driver's cab will not be warmed.**

3.1.4.4 Center console

起重机说明

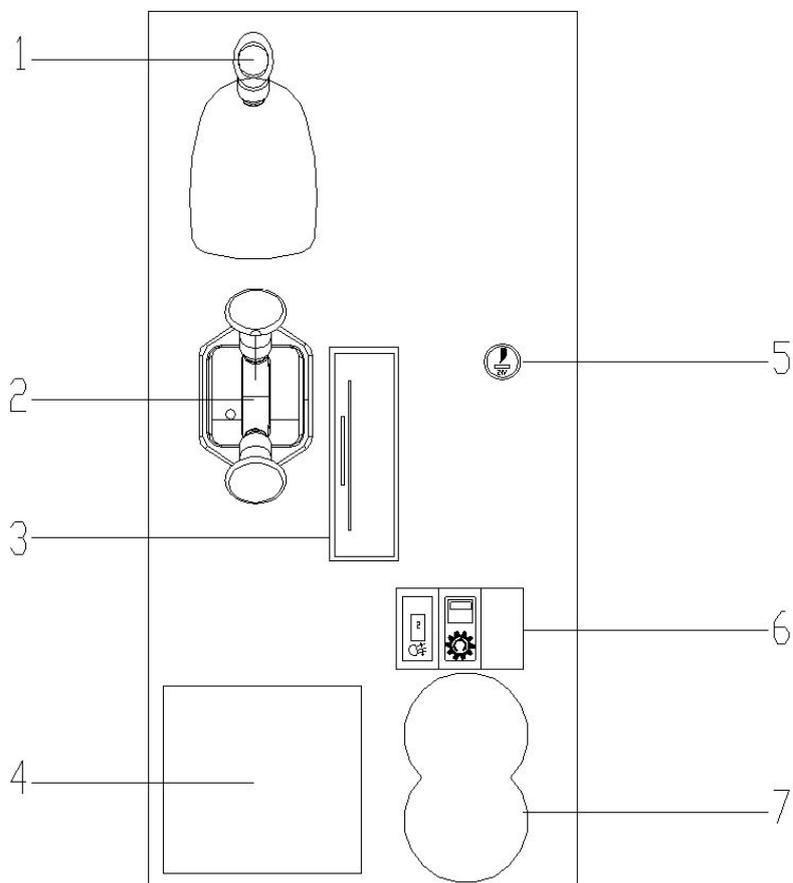


Figure 3-32 Center console

Pos.	Description	Pos.	Description
1	Range selector	5	Cigarette lighter
2	Parking brake hand lever	6	Rocker switches
3	Ashtray	7	Cup holder
4	Storage compartment		

Operation | Crane Chassis

3.1.4.4.1 Range selector

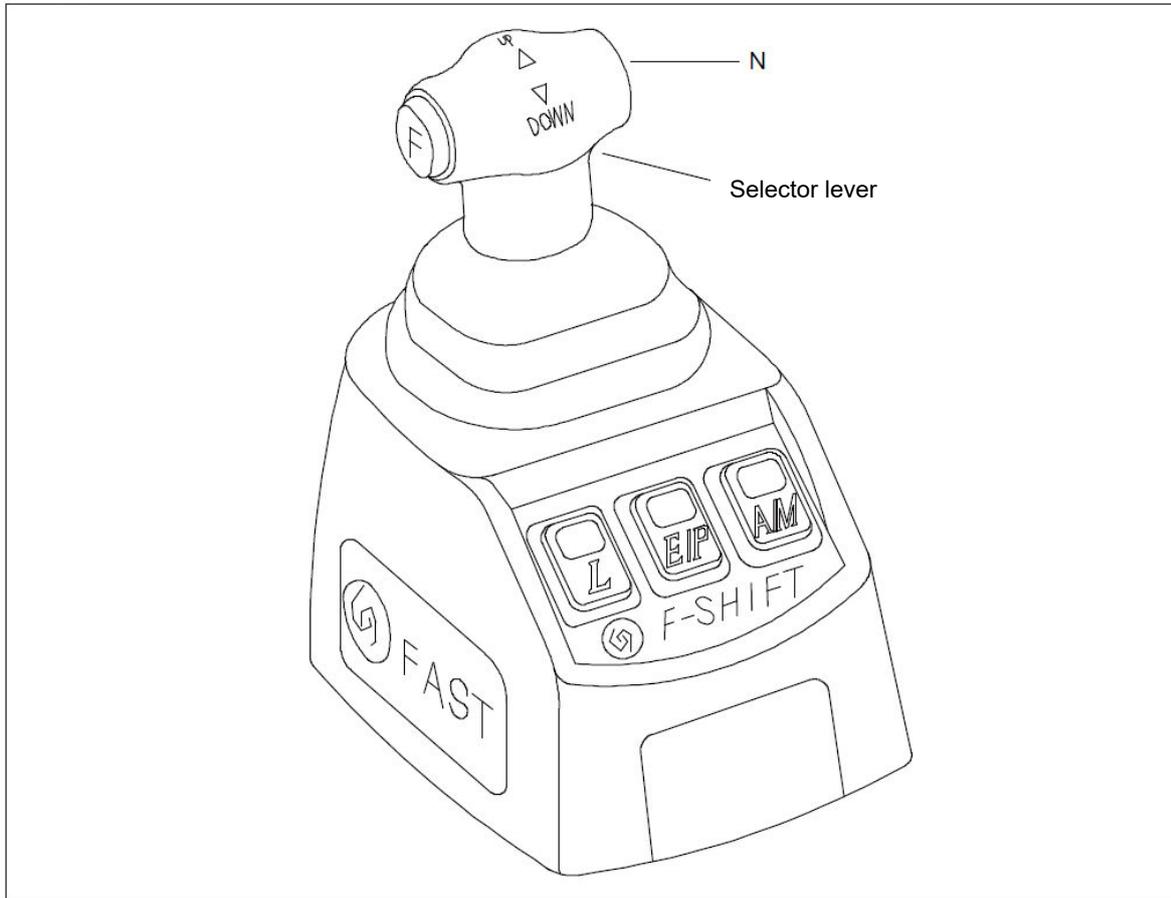


Figure 3-33 Range selector

F: Function button

N: Neutral button (Pressed: return to the neutral position)

UP: Tilt the selector lever forward – upshift

DOWN: Tilt the selector lever backward – downshift

L: Low speed mode

E/P: Changing over the ECO (Economic) mode / Power mode

A/M: Changing over the Automatic mode / Manual mode

The crane adopts the FAST AMT (Automated Manual Transmission). For the overall view of the range selector, refer to Figure 3-15.

The range selector is the control element for:

- Changing over the Automatic mode / Manual mode
- Selecting the gear
- Shifting the gear, etc.

For detailed operating instructions, refer to Section 3.3.4 and the *Operating Instructions for transmission*.

! CAUTION

The transmission lubricant temperature during continuous working must be between -40°C to 120°C . When the working temperature is more than 120°C , the lubricant decomposes and the transmission service life shortens.

! CAUTION

If the working inclination of transmission is more than 12° , the lubrication may be inadequate.

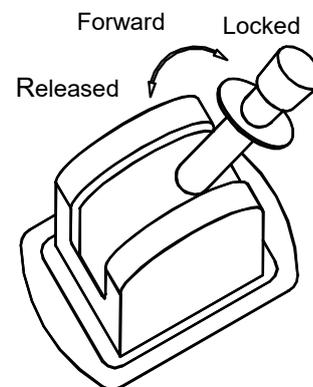
If the slope exceeds 12° , the oil temperature of the transmission may exceed 120° due to long hours of travelling. At this time, bring the vehicle to a standstill to cool the transmission down.

! DANGER

When the transmission lubricant temperature is more than 140°C , the transmission will be burnt out.

3.1.4.4.2 Parking brake hand lever

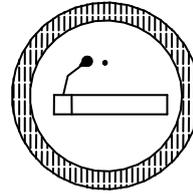
Pull the hand lever of parking brake backwards to lock the vehicle. Pull back the hand lever of parking brake as far as the stop in the hand lever's longitudinal direction and push forward to release vehicle locking. Release the parking brake before driving.

**! CAUTION**

Do not start the vehicle unless the parking brake is released and the control light "Parking brake closed" extinguishes.

3.1.4.4.3 Cigarette lighter

Press the cigarette lighter for 3 to 5 seconds. Pull it out to light cigarette. After you use it, return it back.



Set the ignition starter switch to the "ACC" position, when you use the cigarette lighter with the engine in the "OFF" position.

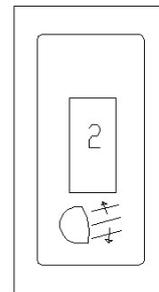
3.1.4.4.4 Rocker switch

1 Switch

Headlight adjustment

The illuminating direction of the headlights will deviate the standard direction since the front headlights have been affected by the factors such as the vibration, the uneven road conditions etc. for a long time.

This switch is used to restore the illuminating direction of the headlights. And thus, the illuminating effect of the headlights is greatly improved.



2 Switch

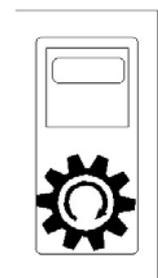
PTO

This switch is with a lock.

Make sure the following prerequisites are met before engaging the PTO:

- Apply the parking brake.
- The suspension is level.
- The axle suspensions are locked.
- Axle 1 is moved back to the 0° position.
- Activate the "Road steering" mode.
- Make sure the pressure shown on the air pressure gauge is above 7.5 bar.
- Open the shutoff gate valve of hydraulic oil tank of superstructure.

The PTO operation consists of one-button automatic power takeoff and semi-automatic



power takeoff.

One-button automatic power takeoff

And activate the PTO switch. After that, the display of transmission gears will indicate “M 6 6” firstly (namely shift into Gear 6 firstly), and next flash between “N” and “6”, and then indicate “M N N” (namely skip back to Gear N), and finally flash between “N” and “6” again. After several seconds, the PTO control light of the LCD illuminates and the engine speed increases to 750 RPM. And the power takeoff output shaft of transmission rotates at this time. And thus, this indicates that it is successful in taking the power off.

Semi-automatic power takeoff

Shift the gear lever into Gear 6 before pressing the function key F. And then, activate the PTO switch. After that, the display of transmission gears will flash between “N” and “6”, and then indicate “M N N” (namely skip back to Gear N), and finally flash between “N” and “6” again. After several seconds, the PTO control light of the LCD illuminates and the engine speed increases to 750 RPM. And the power takeoff output shaft of transmission rotates at this time. And thus, this indicates that it is successful in taking the power off.

Exit

Switch off all of superstructure OMs and switches after finishing the superstructure operation. Come back to the driver's cab and exit the PTO switch directly. And the transmission exists the power takeoff and turns back to Neutral. The PTO control light extinguishes. At this time, it is successful in existing the power takeoff.



- (1) **When the power takeoff fails, exit the PTO switch. Switch off the electricity and stop the engine. Do the items follow after 3- 5 minutes:**
 - **Switch on the electricity****Turn on the ignition starter switch**
Engage the PTO.
- (2) **If you don't open the shutoff gate valve of hydraulic oil tank of superstructure, the power takeoff operation cannot perform. And thus, the superstructure cannot ignite.**
- (3) **Under the one-button automatic power takeoff mode, it takes 32 sec. to take the power off. During this period, the small display field at the top right corner of the LCD will show "The PTO operation is going on. Do not carry out the other operations." Do not carry out any operations during the process of taking the power off. The display field at the top right corner of the LCD will show "Taking the power off is successful." after the power has been taken off successfully. After that, the PTO control light of the LCD illuminates. Subsequently, carry out the superstructure operation.**
- (4) **Do not turn off the power supply of the ignition starter switch directly before deactivating the PTO switch.**
- (5) **After activating the PTO switch to take the power off, you cannot disconnect the PTO switch until the PTO is completely engaged. Do not disconnect the PTO switch directly when the power takeoff operation is not completely successful.**
- (6) **If the above-mentioned situations (items (4) and (5)) occur, disconnect the PTO switch and continually press the neutral key of the transmission for several times. And then, the transmission goes back to Neutral. Electrify the vehicle and take the power off after cutting off the power supply of the ignition starter switch for 5 min.**

3.1.5 Air horn button

It is situated on the side of driver's left foot and the base of the steering wheel.

Pressed: The air horn alarms.

Released: The air horn stops alarming.

3.1.6 Foot pedal: Engine control

It is an electron pedal.

Depressed: The vehicle accelerates.

Released: The vehicle decelerates.

3.1.7 Foot pedal: Service brake

Depressed: The vehicle decelerates or stops.

3.1.8 Clutch pedal

The crane has no clutch pedal since the vehicle is equipped with an automatic transmission.

3.1.9 Crane lighting

3.1.9.1 Front combination signals

Take the lights on the left as an example. The lights on right side are the same as the left ones. For details, refer to Figure 3-34.

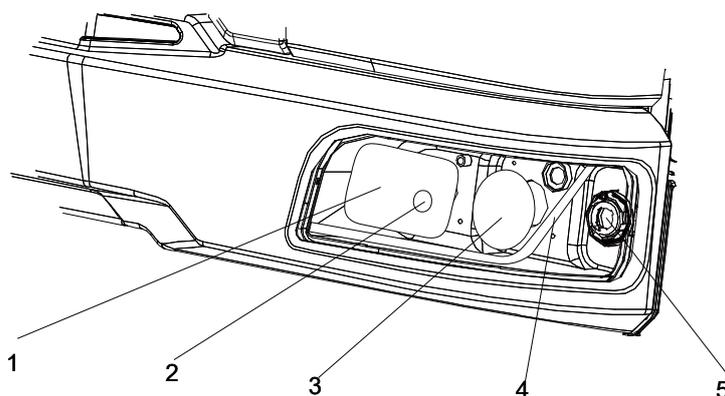


Figure 3-34 Front combination signals

Pos.	Description	Pos.	Description
1	Front high beam	4	Daytime running light
2	Front corner marker light	5	Front turn signals
3	Front low beam		

3.1.9.2 Interior illumination

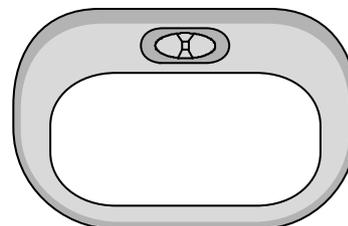
It is installed on the roof of the driver's cab to supply interior illumination.

The door lamp button (namely roof lamp button) is a 3-handed button:

Center position: off

Left and right positions: on

The door lamp will light up if any door is open. If the doors are closed well, the door lamp will go out.



3.1.9.3 Reversing system

The display of the reversing system is installed at the middle top position above the front panel of driver's cab.

For detailed information, please refer to the operating instructions attached to the crane.



Set the ignition starter switch to the "ACC" position, when you use the MP3 player with the engine in the "OFF" position.

3.1.9.4 Reversing radar

Introduction:

The crane is mounted with reversing radars to measure the distances to nearby objects. They can be used to alert the driver to unseen obstacles during reversing maneuvers. Depending on the speed of the vehicle and the distance to the obstacle, the system will warn the driver by audible means about the risk of collision.

Work process:

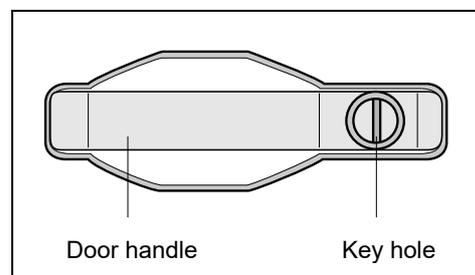
The reversing radars will be automatically activated after you turn the drive range switch to "R". When you move the vehicle slowly and smoothly toward rear, the radars will give signals of presence of the obstacle and the car's computer voice issues the warning statement once detected the obstacle.

When the distance to the radar detector is between 1.2 m and 3 m, the car's computer voice issues "The actual distance". When the distance is less than 1.2 m, the car's computer voice issues the "Stop" statement, warning the driver to stop immediately to avoid collision.

The display of the reversing system in the driver's cab has four bar graphs. The scales of the bar graph change according to the distance from the vehicle tail to the nearby object.

3.1.10 Door – driver's cab

- a) Open the door from outside
Hold the handle and pull it outwards.
- b) Close the door
The door will be locked automatically when the door is closed.



Do not drive the vehicle if the doors are not properly closed and locked!

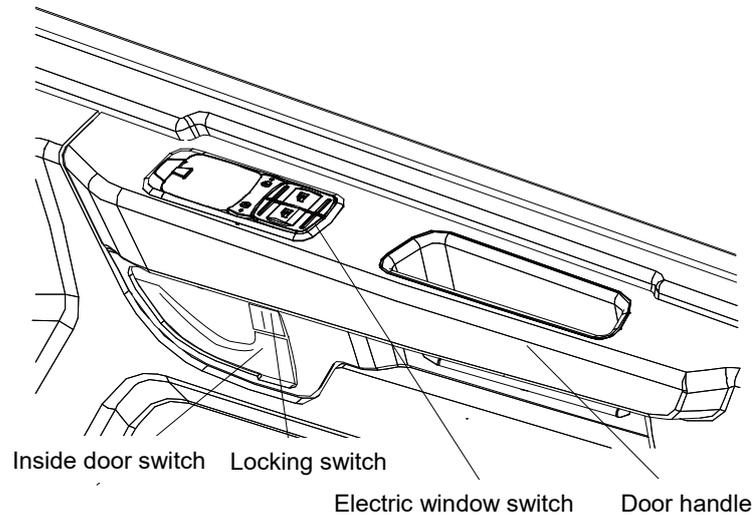


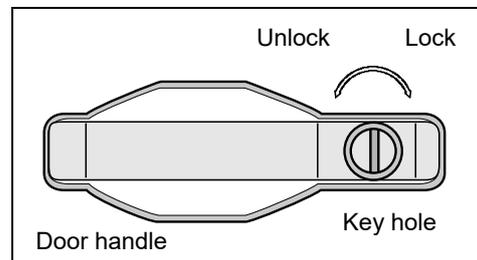
Figure 3-35 Door of driver's cab

- c) Open the door from inside
Pull the inside door switch inwards and hold the handle to push the door outwards.
- d) Lock the door from inside
The locking knob is on the upper part of door.
Pull the locking knob outwards to lock the door from inside after the door is properly closed.
Pull the locking knob outwards before you open the door.



If the door is not closed well, the locking knob cannot be pressed.

- e) Lock the door from outside
Insert vehicle key into the key hole.
Turn it clockwise to lock the door,
turn it counterclockwise to unlock
the door.



3.1.11 Seats in driver's cab

3.1.11.1 Driver's seat

The driver's seat with single armrest has pneumatic suspension and can be adjusted to suit any driver's height or size. Adjust driver's seat before setting off. Refer to Figure 3-36.

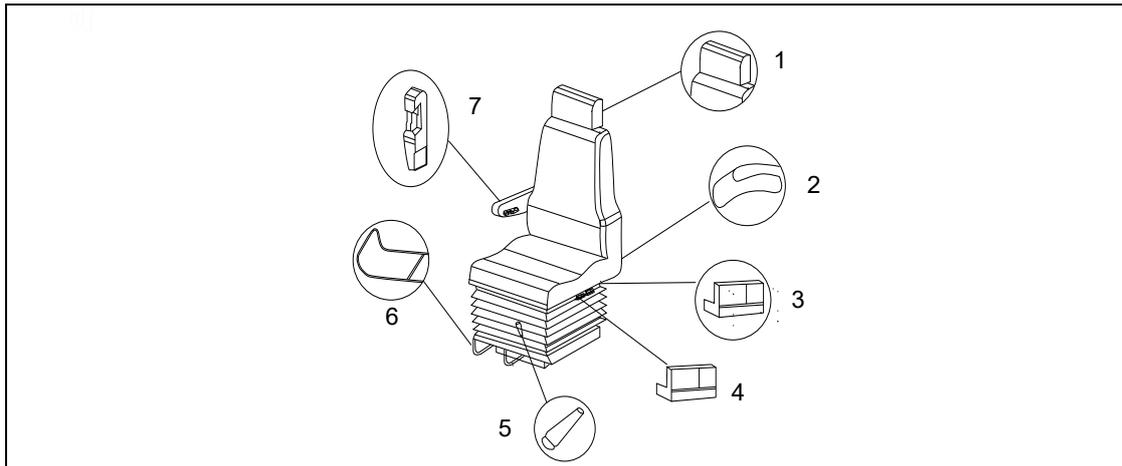


Figure 3-36 Driver's seat

Pos.	Description	Pos.	Description
1	Switch, adjust headrest setting	5	Handle, adjust damper
2	Handle, adjust backrest setting	6	Lever, adjust horizontal setting
3	Handle, adjust seat cushion angle (rear section)	7	Rotary switch
4	Handle, adjust seat cushion angle (front section)		

1 Switch, adjust headrest setting

Press this switch to move the headrest upwards or downwards. Release the switch to lock the headrest.

2 Handle, adjust backrest setting

Pull handle 2 forwards. Release it until the backrest stops at a suitable angle.

3 Handle, adjust seat cushion angle (rear section)

Pull handle 3 upwards. Release it until the cushion (rear section) stops at a suitable angle.

4 Handle, adjust seat cushion angle (front section)

Pull handle 4 upwards. Release it until the cushion (front section) stops at a suitable angle.



For handles 3 and 4, shake the seat after seat adjustment to make sure the seat is locked.

5 Handle, adjust damper

Rotate handle 5 anticlockwise to lock the damper for air bag. Rotate it clockwise to unlock and activate the damper.

6 Lever, adjust horizontal setting

Pull lever 6 upwards. Release it until the cushion stops at a suitable position.

7 Rotary switch

Turn the switch clockwise to raise the armrest and anticlockwise to lower the armrest.

3.1.11.2 Co-driver's seat

The co-driver's seat is equipped with double armrests. Its stiffness of suspension is adjusted mechanically. Refer to Figure 3-37.

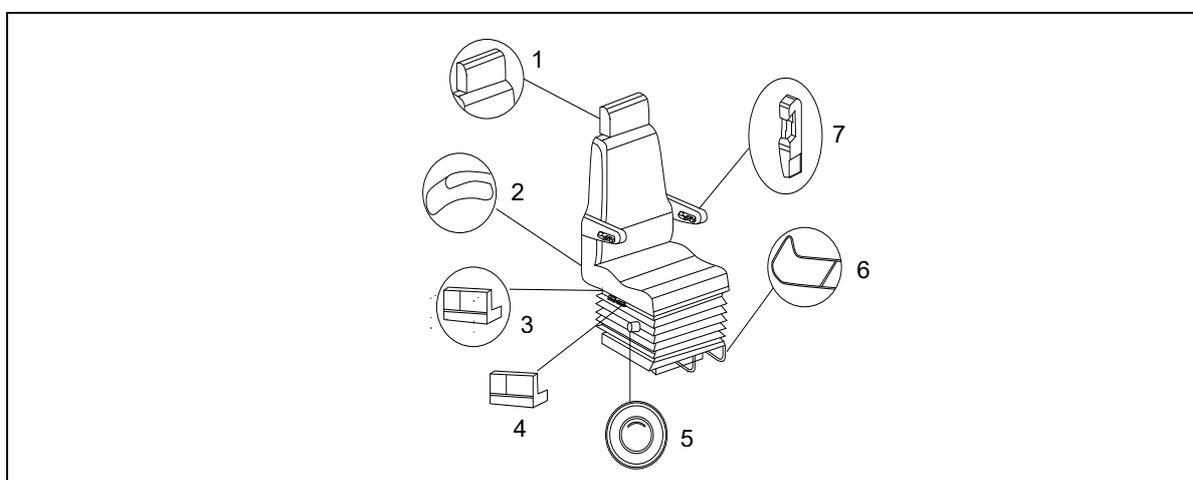


Figure 3-37 Co-driver's seat

Pos.	Description	Pos.	Description
1	Switch, adjust headrest setting	5	Handle, adjust damper
2	Handle, adjust backrest setting	6	Lever, adjust horizontal setting
3	Handle, adjust seat cushion angle (rear section)	7	Rotary switch
4	Handle, adjust seat cushion angle (front section)		

1 Switch, adjust headrest setting

Press this switch to move the headrest upwards or downwards. Release the switch to lock the headrest.

2 Handle, adjust backrest setting

Pull handle 2 forwards. Release it until the backrest stops at a suitable angle.

3 Handle, adjust seat cushion angle (rear section)

Pull handle 3 upwards. Release it until the cushion (rear section) stops at a suitable angle.

4 Handle, adjust seat cushion angle (front section)

Pull handle 4 upwards. Release it until the cushion (front section) stops at a suitable angle.

CAUTION

For handles 3 and 4, shake the seat after seat adjustment to make sure the seat is locked.

5 Rotary switch, adjust stiffness of the suspension

Turn the switch clockwise or anticlockwise to adjust the seat cushion depth according to co-driver's actual conditions.

CAUTION

Do not turn the switch below the range of 40 kg or above the range of 130 kg.

6 Lever, adjust horizontal setting

Pull lever 6 upwards. Release it until the cushion stops at a suitable position.

7 Rotary switch

Turn the switch clockwise to raise the armrest and anticlockwise to lower the armrest.

3.1.11.3 Passenger's seat

The passenger's seat is equipped with fixed double armrests and two-point seat belt. Refer to Figure 3-38.

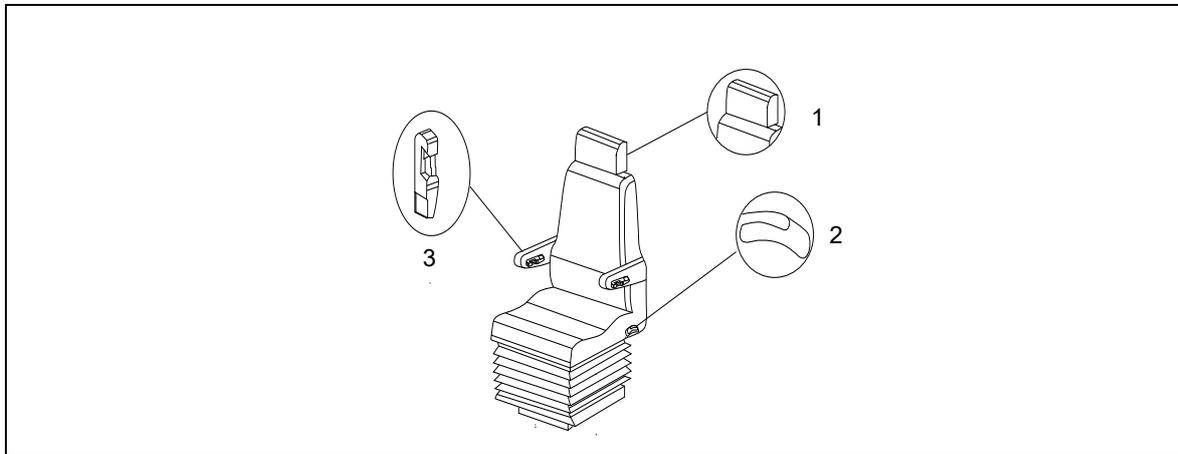


Figure 3-38 Passenger's seat

Pos.	Description	Pos.	Description
1	Switch, adjust headrest setting	3	Rotary switch
2	Handle, adjust backrest setting		

Note: The operating modes of the switches or handle are the same as the driver's seat.

3.1.11.4 Longitudinal position and backrest angle of seat

Refer to Figure 3-39.

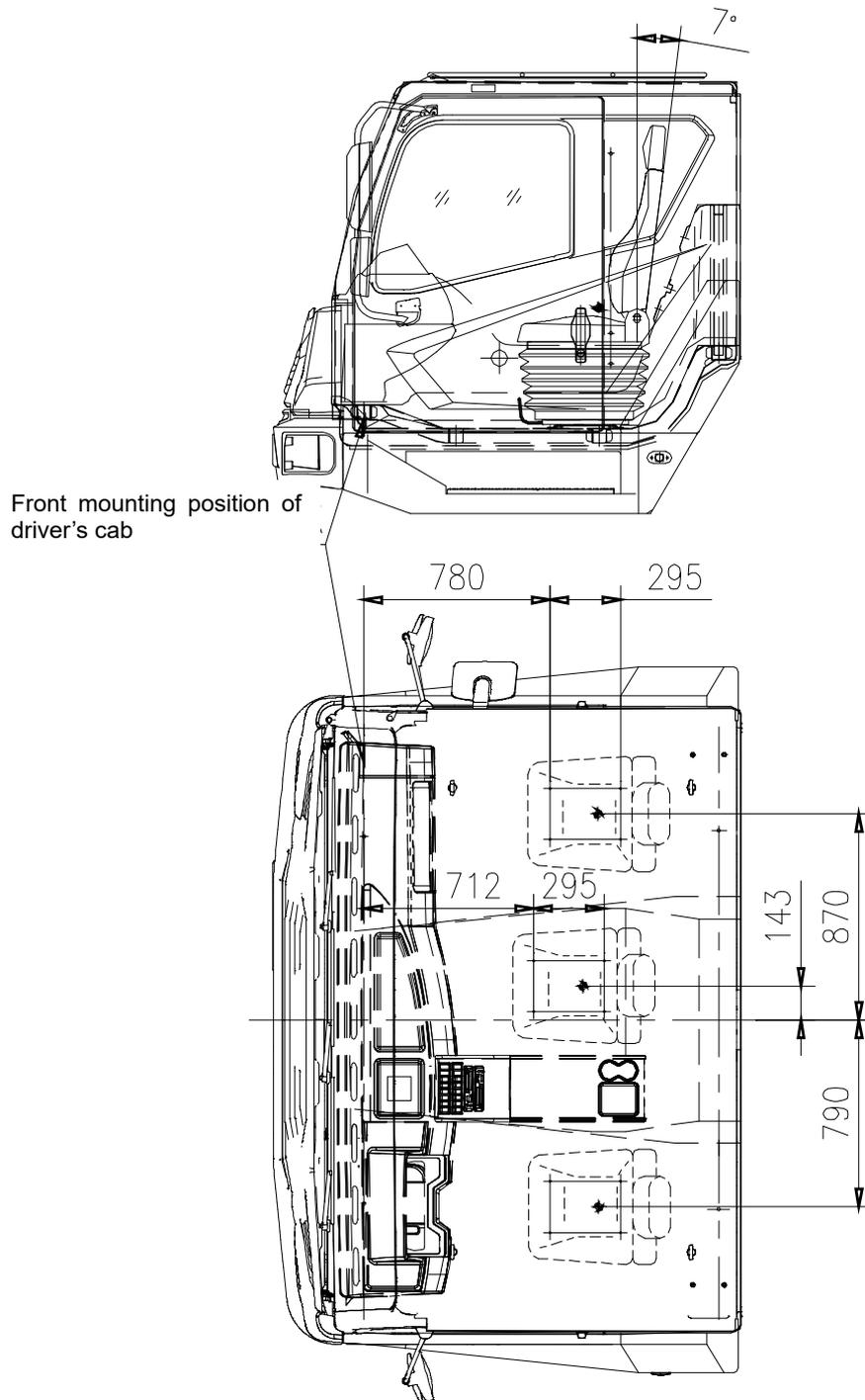


Figure 3-39 Longitudinal position and backrest angle of seat

3.1.11.5 Putting on seat belt

Fasten and adjust the seat belt to a suitable position before setting off.

Insert the tongue piece into the belt lacer to fasten the belt.

Press the button to unfasten the belt.



Risk of fatal injury if seat belt is not worn!

All occupants must be belted in before setting off in the crane and during the drive.

3.1.12 Attachments

a) Sun visor

The sun visor is located above front windshield inside driver's cab.

Pull the sun visor downwards to shut out the sunshine.

Push the sun visor upwards to roll it up.

b) Toolbox

The toolbox is in the instrument console of the driver's cab, in which there is a toolbox.

Press the switch to open the toolbox and push down the cover to close it.

c) Cigarette lighter

Refer to Section 3.1.4.4.3.

3.2 Before starting up the vehicle

3.2.1 Operating conditions

- a) If the crane is used for the first time, make sure the crane is in proper working condition (without damage or abnormalities).
- b) Always use the correct light diesel oil and engine oil. Make your selection on the lowest ambient temperature where you are to do the work. Obey the *Operation and Maintenance Manual for WP12 Series Diesel Engine* to choose the brand.

3.2.2 General checks before setting off

- a) Examining the oil level
 - 1) Examine oil level in the vehicle engine.
 - 2) Examine oil level in transmission, transfer case and axles.
 - 3) Examine oil level in chassis hydraulic oil tank.
- b) Examining the fuel reserve
Examine fuel reserve at fuel gauge in driver's cab.



(1) Do not run the fuel tank dry!

If the fuel tank has been run dry, always de-aerate the entire fuel system.

(2) The reasonable change interval of fuel hose is 24 months or 20000 km.

- c) Examining the coolant level
Examine the coolant level from the liquid level gauge in the expansion tank. Fill auxiliary coolant reservoir up to near the "MAX" mark.



Risk of injury due to scalding of the skin.

Engine must be cold when performing cooling water level check.

- d) Examining the tires
 - 1) Examine working conditions of the tires.
 - 2) Examine air pressure and inflate tires to 1.0 MPa (homemade tires) / 0.9 MPa (imported tires).



Do not exceed the maximum air pressure during inflation.

- e) Examining the mounting connections
- Make sure that the parts that follow are tight:
 - Bolts in steering & drive systems and positioning bolt of pins of suspension cylinders
 - Wheel bolts.
 - Make sure that the parts in the steering and brake systems are flexible, safe, and reliable. Especially make sure that the parts that follow are tight:
 - Fittings of steering drag link
 - Ball head of steering booster cylinder
 - Retaining bolts of steering wheels
 - Brake chambers of axles
 - Pipes.
- f) Examining the items that follow for damage:
- Door locks
 - Doors
 - Windows
 - Operating mechanisms.
- g) Examining the outside mirrors for proper position.
- h) Examining the electrical system
- 1) Examine the battery terminals for too much corrosion and make sure that the power wires are tight.
 - 2) Examine the level of the battery electrolyte.
 - 3) Turn the ignition starter switch to the "ON" position and examine the functions of the items that follow:
 - Instruments
 - Switches and buttons
 - Lighting
 - Control lights and warning lights
 - Wipers.
- i) Examining the pipes
- 1) Examine the fittings of oil pipes, air pipes and water pipes for leakage.
 - 2) Examine the air reservoir for condensation (drain the water as necessary).
- Refer to Figure 3-40.

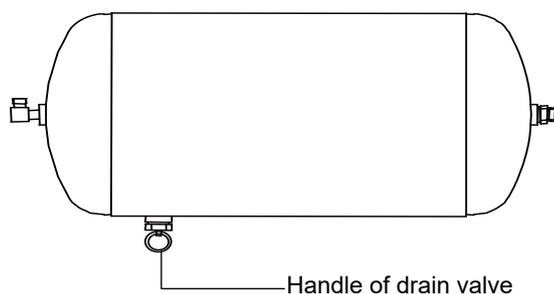


Figure 3-40 Air reservoir

! CAUTION

- (1) Prop up or withdraw the handle of drain valve to drain the water.
- (2) Do not start up the vehicle until the drain valve is closed after the water is drained out.
- (3) For the region in an ambient temperature below 0°C, drain the water within 20 minutes after you stop crane operation to prevent the air reservoir from freezing.
- (4) Examine the air filter vacuum actuated indicator. If the light is in the red area, clean or replace the filter element.
- (5) The rated working pressure for air reservoir is 1.0 Mpa.

! CAUTION

Remove all contamination (dust and sand) from the dust collector at the bottom of the air filter.

- j) Before the crane can be driven on public roads, make sure that the following prerequisites are met:
 - All loose parts are secured onto the crane.
 - The axle suspension is unlocked.
 - The operator's cab is in the driving direction and secured mechanically.
 - The telescopic boom is fully retracted and placed on the boom support.
 - The doors and windows of the operator's cab are closed.
 - Sliding beams must be fully retracted and secured with pins.
 - Engine housing and toolbox door have been locked.
- k) Examining the lighting

Turn the ignition starter switch to the "ON" position, and examine the lighting before setting off. Refer to Figure 3-41.

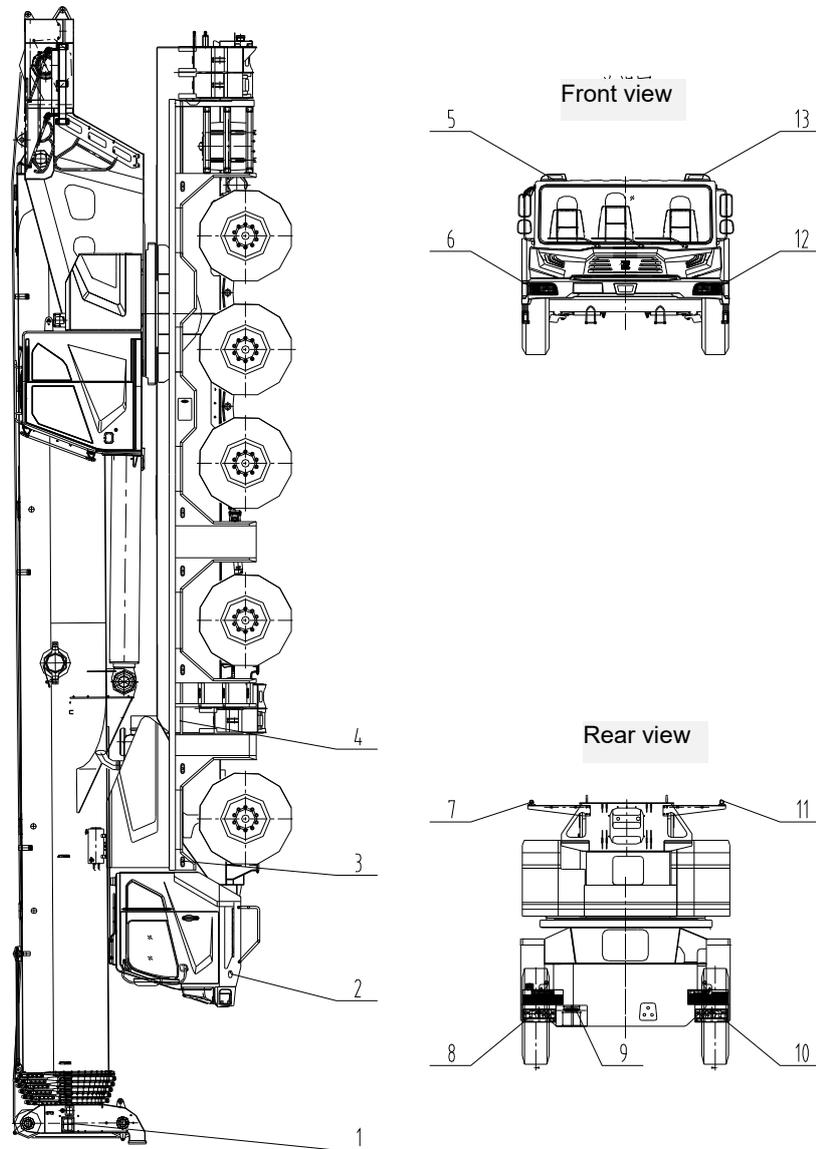


Figure 3-41 Vehicle lighting

Pos.	Description	Pos.	Description
1	Work lights on boom head	8	Left rear combination signals
2	Side turn signals	9	License plate lamp
3	Side marking lights and reflectors	10	Right rear combination signals
4	Outrigger illumination	11	Right rear corner marker lights
5	Front corner marker lights, roof	12	Left front combination signals
6	Right front combination signals	13	Left front corner marker lights
7	Upper corner marker lights		

- 1) Left rear combination signals (on chassis frame left rear part)

Refer to Figure 3-42.

The left rear combination signals are combined in a rectangle plate.

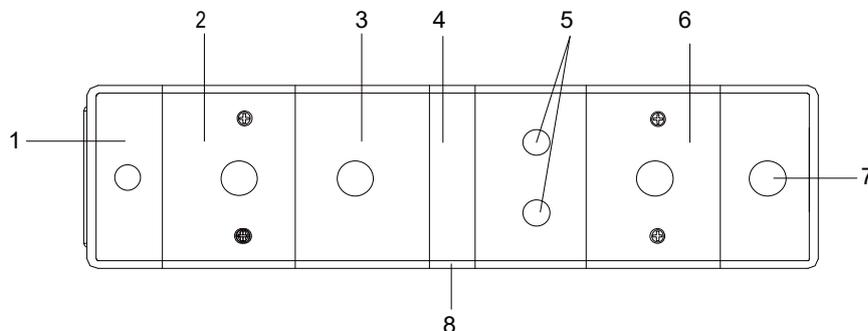


Figure 3-42 Left rear combination signals

Pos.	Description	Pos.	Description
1	Corner marker light (red)	5	Rear width lamp (red)
2	Turn signal (Amber)	6	Rear fog lamp (red)
3	Brake lights (red)	7	Reversing light (white)
4	Reflector	8	License plate lamp

- 2) License plate lamp
- 3) Right rear combination signals (on chassis frame right rear part)

It is the same as the left rear combination signals.

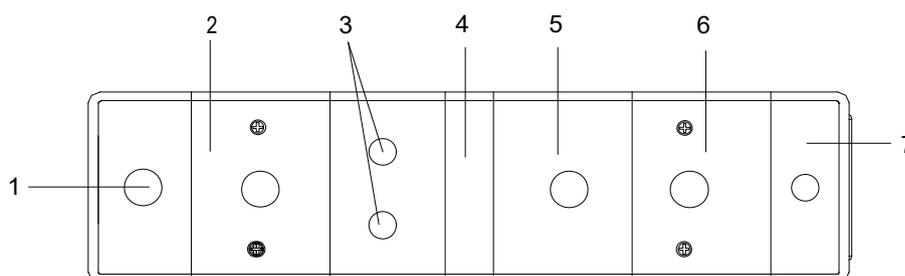


Figure 3-43 Right rear combination signals

Pos.	Description	Pos.	Description
1	Reversing light	5	Brake lights
2	Rear fog lamp	6	Turn signal
3	Rear width lamp	7	Corner marker light
4	Reflector		

- 4) Right rear corner marker lights
- 5) Left front combination signals
- 6) Left front corner marker lights

Examine the following illuminations and warning devices before setting off.

- Interior illumination
It is installed on the roof of the driver's cab to supply interior illumination.
- Sliding beam illumination
They are installed near the front and rear outrigger boxes to supply illumination for sliding beams. It is convenient for the operator to observe working conditions of sliding beams at night.
- Buzzer
The reversing light will illuminate and the buzzer will send out slow alarm when reversing gear is applied.
The buzzer will send out slow alarm when one of the following conditions occurs:
 - the pressure of the air brake system is low
 - the coolant level in the engine is low
 - the steering system fails.



Danger of accident if lighting is defective!

Arrange to have any defective lights repaired by an expert before setting off!

- a) Driver's cab
 - 1) Adjusting driver's seat
The driver's seat can be adjusted to suit any driver's height or size.



The functions of driver's seat are not completely the same as the co-driver's seat. For detailed information, refer to Section 3.1.11.

- 2) Adjusting the mirror
Clean outside mirrors before setting off and adjust them to suit driver's field of view.
Adjust the outside mirrors manually.
- 3) Adjusting the steering wheel
The steering wheel is adjusted mechanically.
Operate the steering wheel adjustment handle (Refer to Section 3.1.2).

Result:

- The angle and height of the steering wheel are adjusted to suit the driver.

 **DANGER**

Do not adjust the steering wheel, driver's seat and outside mirrors while driving.

4) Turning heater / ventilation on

The cab can be heated or ventilated to the desired temperature.

For a detailed operation, refer to Section 3.1.4.3.

To adjust the heater or ventilation, use the buttons in A/C control panel.

 **CAUTION**

Turn off the shutoff gate valve on the hot-water pipe of heater at the bottom of driver's cab when you use the air conditioning in summer and turn on the valve in winter.

5) Examining main controls

Make sure that the battery master switch is on when you do the following checks.

Examine the following components:

- High beam
- Rear fog lamp
- Fan
- Windshield wiper / washer system / windshield washing fluid container
- Horn
- Rotating beacons

 **DANGER**

Danger of fatal injury due to defective main controls! Arrange to have any defective functions repaired by an expert before setting off.

b) Fuse

- 1) Open the cover of the center console and take it out.
- 2) Open the cover of fuse box.
- 3) Examine the fuse and replace the defective one.

 **WARNING**

Use the fuse of same size and specification. Otherwise, the electrical system will be damaged.

3.2.3 Axle suspension / axle locking system

3.2.3.1 Introduction

Only axles 1 and 2 of the complete vehicle adopt the hydro-pneumatics suspensions. And axles 3, 4 and 5 adopt the steel spring plate suspensions. The heights of axles 1 and 2 are adjustable and can be hydraulically locked. When the button "Locking the axle suspension" is in a reset condition, namely this button is not been pressed, the hydro-pneumatics suspensions of axles 1 and 2 have been set to "Sprung".

3.2.3.2 Controls and functions of hydro-pneumatic suspension

The following controls are automatic.

- a) Automatic level control, suspensions of axles 1-2

The button "Automatic level control, axles 1 and 2" operates the automatic level control of axles 1 and 2. The crane is automatically moved to a level position (driving height for road driving). Press the button "Automatic level control, axles 1 and 2" and depress the engine control pedal to increase the engine speed until the control light "Entire vehicle leveled" lights up. Turn off the button after the axles 1 and 2 are leveled.

For the level control of the suspensions of axles 1 and 2, make sure that the following preconditions are met:

- 1) The vehicle is on a level surface.
- 2) The chassis engine is running.
- 3) The axle suspension is set to "sprung".
- 4) The transmission is in neutral "N".



Level the crane on a level and load-bearing surface before road driving.

- b) Raising / lowering the left vehicle level, axles 1 and 2

- Press upper part of 3-handed button "Vehicle level, raise / lower left front".

Result:

The left vehicle level of axles 1 and 2 is raised.

- Press lower part of 3-handed button "Vehicle level, raise / lower left front".

Result:

The left vehicle level of axles 1 and 2 is lowered.

- c) Raising / lowering the right vehicle level

- Press upper part of 3-handed button "Vehicle level, raise / lower right front".

Result:

The right vehicle level of axles 1 and 2 is raised.

- Press lower part of 3-handed button “Vehicle level, raise / lower right front”.

Result:

The right vehicle level of axles 1 and 2 is lowered.

A detailed description of the above 3-handed buttons can be found in Section 3.1.4.1.



- (1) The above 3 controls must only be performed when the vehicle is stationary and the suspension is set to “Sprung”!**
- (2) Performing level control is only permitted in order to adapt the crane to special situations such as lowering the crane to drive under a bridge. Adjust the driving height only when the vehicle is stationary. Once the special situation is finished, level the vehicle and reset it to the normal driving condition.**
- (3) Risk of injury when operating axle suspension / axle locking system!
Make sure that no persons are presented in the crane danger zone!
Perform level control on a level and load-bearing surface.**

3.2.4 General checks at vehicle start up

Examine the controls and instruments.

- Examine the engine oil pressure gauge.
 - Idle speed: The engine oil pressure must be between 1.3 bar and 2.5 bar..
 - Rated engine RPM: The engine oil pressure must be between 3.5 bar and 5.5 bar..
- Examine the barometers.

If the brake pressure is less than 0.55 MPa, the warning light “Brake pressure low” will illuminate. Risk of danger if start off at this time! Meanwhile, the buzzer gives out acoustic warning and air line system cannot work normally due to low air pressure.
- Examine the thermometer.

The pointer must point to the range (above 60°C).
- Examine the diesel oil level whether it is satisfy the requirement of travel distance.
- Make sure that the parking brake is released.

3.3 Driving the crane

3.3.1 Crane driving conditions

Before the crane can be driven on public roads, make sure that the following prerequisites are met:

- All loose parts are secured onto the crane.
- The telescopic boom is fully telescoped in and placed on the boom support.
- The operator's cab is in the driving direction and secured mechanically.
- The doors and windows of the operator's cab are closed.
- Sliding beams must be fully retracted and secured with pins.
- Engine housing and toolbox door have been locked.

3.3.1.1 Total mass 55 tons, driving condition

You should dismantle the items below to avoid the axle overload:

- Hook block
- Rooster sheave
- Jib and jib bracket
- Tip boom
- Auxiliary winch (including auxiliary hoist ropes)
- Counterweight lifting cylinders
- Sliding beams (including the oil cylinders)
- Outrigger pads
- Counterweight
- Spare tire.

See Figure 3-44.

Overall dimensions (L × W × H): 16.64 m × 3 m × 4 m

Axle load distribution: 11.97t/11.97t /10.32t/10.32t/10.32t (on a level road)

Max. driving speed: 80 km/h

When the road surface is dry asphalt or concrete one and the vehicle starts to travel on the ascending slope at gear 1, max. permissible gradeability is 47%.

When the road surface is dry asphalt or concrete one and the vehicle starts at gear 1, max. permissible starting gradeability is 47%.

When the road surface is dry asphalt or concrete one, max. permissible parking grade is 29%.

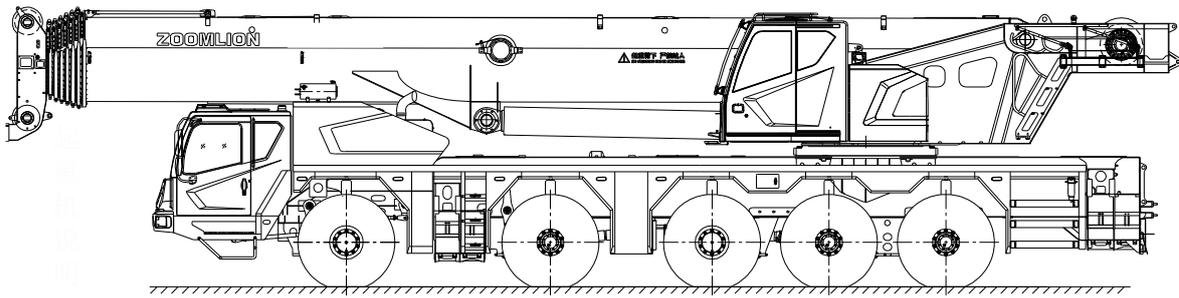


Figure 3-44 Overall view – Total mass 55 tons in driving condition

! CAUTION

The total mass 55 tons, max. on-road total mass in driving condition which is allowed by the national traffic laws and regulations, has been applied for the *National Bulletin*.

3.3.1.2 Total mass 60 tons, off-road transition condition

You should dismantle the items below to avoid the axle overload:

- Hook block
- Jib and jib bracket
- Tip boom
- Auxiliary winch (including auxiliary hoist ropes)
- Counterweight
- Spare tire.

See Figure 3-45.

Overall dimensions (L × W × H): 16.64 m × 3 m × 4 m

Axle load distribution: 12.15t/12.15t/11.9t/11.9t/11.9t (on a level road)

Max. driving speed: 70 km/h

When the road surface is dry asphalt or concrete one and the vehicle starts to travel on the ascending slope at gear 1, max. permissible gradeability is 42%.

When the road surface is dry asphalt or concrete one and the vehicle starts at gear 1, max. permissible starting gradeability is 42%.

When the road surface is dry asphalt or concrete one, max. permissible parking grade is 26%.

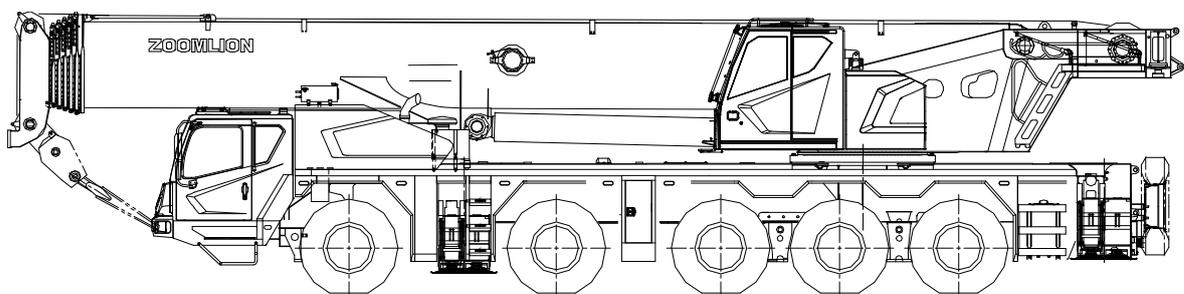


Figure 3-45 Overall view – Total mass 60 tons in driving condition

3.3.1.3 Total mass 75 tons, off-road transition condition

You should dismantle the items below to avoid the axle overload:

- Auxiliary winch (including auxiliary hoist ropes)
- Other counterweights (excluding the lower counterweight plate).

See Figure 3-46.

Overall dimensions (L × W × H): 16.64 m × 3 m × 4 m

Axle load distribution: 18t/18t/13t/13t/13t (on a level road)

Max. driving speed: 20 km/h

When the road surface is dry asphalt or concrete one and the vehicle starts to travel on the ascending slope at gear 1, max. permissible gradeability is 32%.

When the road surface is dry asphalt or concrete one and the vehicle starts at gear 1, max. permissible starting gradeability is 32%.

When the road surface is dry asphalt or concrete one, max. permissible parking grade is 21%.

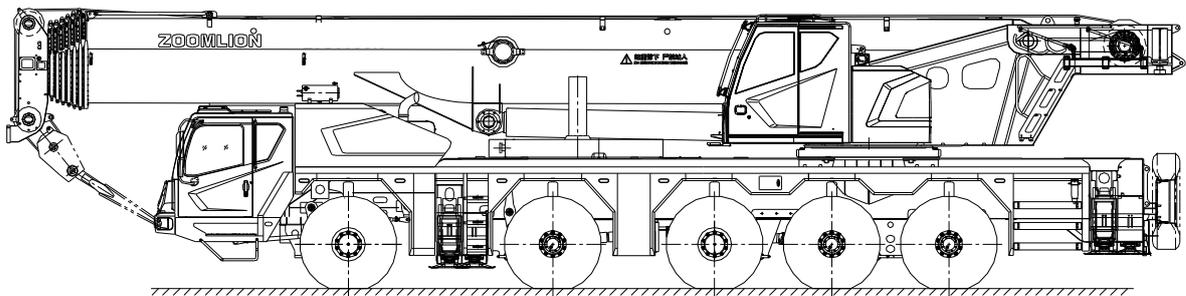


Figure 3-46 Overall view – Total mass 75 tons in driving condition



- (1) When this vehicle is in the driving order or in the transition order, the driver should obey the laws and regulations as well as the stipulations stated in the documents attached with this product. Furthermore, the driver should be fully responsible for any of illegal behaviors.
- (2) As for the above-mentioned driving or transition parameters, the following prerequisites should be fulfilled:
 - The vehicle is in an intact and good condition.
 - The road surface should be dry, level and solid asphalt or concrete one which has good adhesive force.

If the road is in the bad condition or it is wet and slippery, the gradeability and the parking grade will decrease. And the brake distance will become longer.

- (3) Travel mode of which the total weight is from 60t to 75t is applied to the short-distance transit off-road conditions. Before transition, the field engineer should confirm the safe transit plan according to the conditions of the vehicle, the road and the weather. After that, carry out the transition operation according to the transit plan.

- (4) The vehicle speed should be limited strictly when the travel mode of which the total weight is from 60t to 75t is under the off-road transition condition. Otherwise, the following faults will occur.
- The steering operation is out of control.
 - The brake distance will be lengthened.
 - The service life of the parts and components of the driving system will shorten. Or even the parts and components are damaged.

3.3.2 Starting and stopping the engine

3.3.2.1 Starting the engine

- a) Check: Refer to section 3.2.4 "General checks at vehicle start up".
- b) How to start the engine:
- 1) Put the transmission in the neutral position.
 - 2) Apply the parking brake.
 - 3) Turn the ignition starter switch to the "ON" position for preparation.
 - 4) In winter, the engine will be preheated automatically before starting (The control light "Diesel engine preheating system" lights up).
 - 5) After the control light "Diesel engine preheating system" goes off, slightly apply the engine control and turn the ignition starter switch to the "S" position to start the engine.



- (1) Turn the ignition starter switch to the "S" position within 30 seconds after the control light "Diesel engine preheating system" extinguishes.
 - (2) If the engine does not start after a maximum of 15 seconds, wait for 30 seconds. The starter can be operated three times for 15 seconds per attempt with a pause in between of 30 seconds respectively.
 - (3) If the engine cannot be started for 3 times, rectify the errors.
- c) Preheat the engine and examine instruments for functions:
After the engine is started, run the engine at 1000 r/min – 1500 r/min for several minutes. During this time, examine the instruments and control lights / warning lights for functions.



- (1) In order to make the engine oil flow into each part of engine and raise up water temperature to burn the fuel normally, it is necessary to warm up the engine before starting.
- (2) Do not run the engine at high speed without a load during warming up. Otherwise, the engine will be damaged and its service life will be shortened.

- (3) Do not run the engine at idle speed for a long time. Otherwise, the engine performance might be weakened.
- (4) Do not run the engine at high speed with a heavy load when the coolant temperature is below 60°C.
- (5) The engine oil pressure should not be lower than 1.0 bar when the engine runs at idle speed. With the engine warming up, the oil pressure is going to be stable gradually.



Do not run the engine in a place where combustible gas exists.

The gas may be inhaled into the engine through the air intake system to make the engine speed up even overspeed, which may cause fire, explosion and heavy wealth losses.

3.3.2.2 Turning off the engine

- a) Depress the service brake pedal slightly to decelerate the vehicle, at the same time, gradually shift down the transmission to the 1st gear position.
- b) When the engine decelerates to the low speed, depress the service brake pedal at the same time to bring the vehicle to a standstill at the specified location.



Except in an emergency, do not depress the service brake pedal jerkily!

- 1) Pull the parking brake hand lever backwards to the locking position to park the vehicle and then shift the transmission to the neutral position.
- 2) Run the engine at idle speed for several minutes after the vehicle stops so as to cool the engine down gradually.
- 3) Turn the ignition starter switch to Position ACC and stop the engine.
- 4) Turn the ignition starter switch to the "LOCK" position and pull the key out after the engine is stopped for about 30 seconds.
- 5) Do not keep the ignition starter switch in the "ON" or "ACC" position after you park the crane. The battery drains in these conditions.
- 6) If you park the crane on a slope, you must put chocks before and behind the wheels to avoid accident.
- 7) To prevent an accident when you park the crane in the dark, you must turn on the hazard lights.

3.3.3 Driving

- a) Changing the idling speed



When the range selector is shifted from “N” to “D”, you must depress the service brake pedal. The engine RPM will be decreased a little after you select the required gear.



Run the engine at idle speed before shifting from “N” to “D” or “R” when the crane is stationary.

- b) Setting axle suspension and leveling the vehicle
Unlock the axle suspension and level the vehicle.

- c) Releasing parking brake

Pull back the hand lever of parking brake as far as the stop in the hand lever's longitudinal direction and push forward.



Do not release parking brake until the warning light “Brake pressure low” goes off (air pressure achieves 0.55 MPa). Pull the hand lever again and fill compressed air until the warning light turns off!

NOTICE

When the parking brake is released, the crane can immediately start moving.

- d) Examining the brake system

- 1) Service brake

Depress engine control pedal to increase engine RPM. The vehicle begins to move.
Depress service brake pedal and examine the service brake.

- 2) Engine brake

The engine brake includes the compression brake and the in-cylinder brake.



Utmost care should be taken when you operate the engine exhaust brake!



Only operate the engine exhaust brake with engine running.

Sensible use of the retarder with anticipating driving methods reduces wear on the service brake and thereby reduces operating cost.

On long descending gradients

On long descending gradients, you should apply the engine brake to obtain a long-time continual driving. The brake is used for an emergency situation.

Correctly use the engine exhaust brake as possible as you can to relax the service brake.



Use the gear as the same as the one when the vehicle travels on the ascending slope. The transmission will automatically shift to the lower gear in order to enhance the deceleration effect if the engine speed allows.

On snow, ice and dirty road surfaces

Careful use of the engine exhaust brake will ensure safe and sure deceleration even under bad road conditions.



In the event that the wheels lock when operating the engine exhaust brake, select a lower switching stage!

3.3.4 Transmission operation

The shift module contains transmission control unit (TCU), directional control valve, shift cylinder and sensor to activate the manual and automatic shift operations.

The driver can press the button "A/M" on the range selector to change over the Automatic mode / Manual mode at vehicle start up or during driving. The current operating mode shows on the instrument panel or the transmission diagnosis display. The default operating mode is the Automatic mode.

a) Automatic mode <A>

In this mode, the AMT (Automated Manual Transmission) can select the gear and trigger a shift automatically according to the driving condition.

The driver can also interfere with the gear selection via the range selector at all times in the following methods:

- Press and hold the function button and tilt the selector lever forward or backward once to upshift or downshift one gear.
- Tilt the selector lever forward or backward once to upshift or downshift at least one gear.
- Press the function button for several times (multiple upshift or downshift). Then release the function button and tilt the selector lever forward or backward. If the gear selected is proper, the system will change over to the selected gear. If the gear

selected is improper, the system will change over to a proper gear automatically.

CAUTION

The gear requested by the driver can be actuated only when the gear is suitable for the current driving condition. The driver's manual intervention with the AMT can only be functional in a certain period of time. That is to say, the AMT will not exit the Automatic mode under the driver's manual intervention.

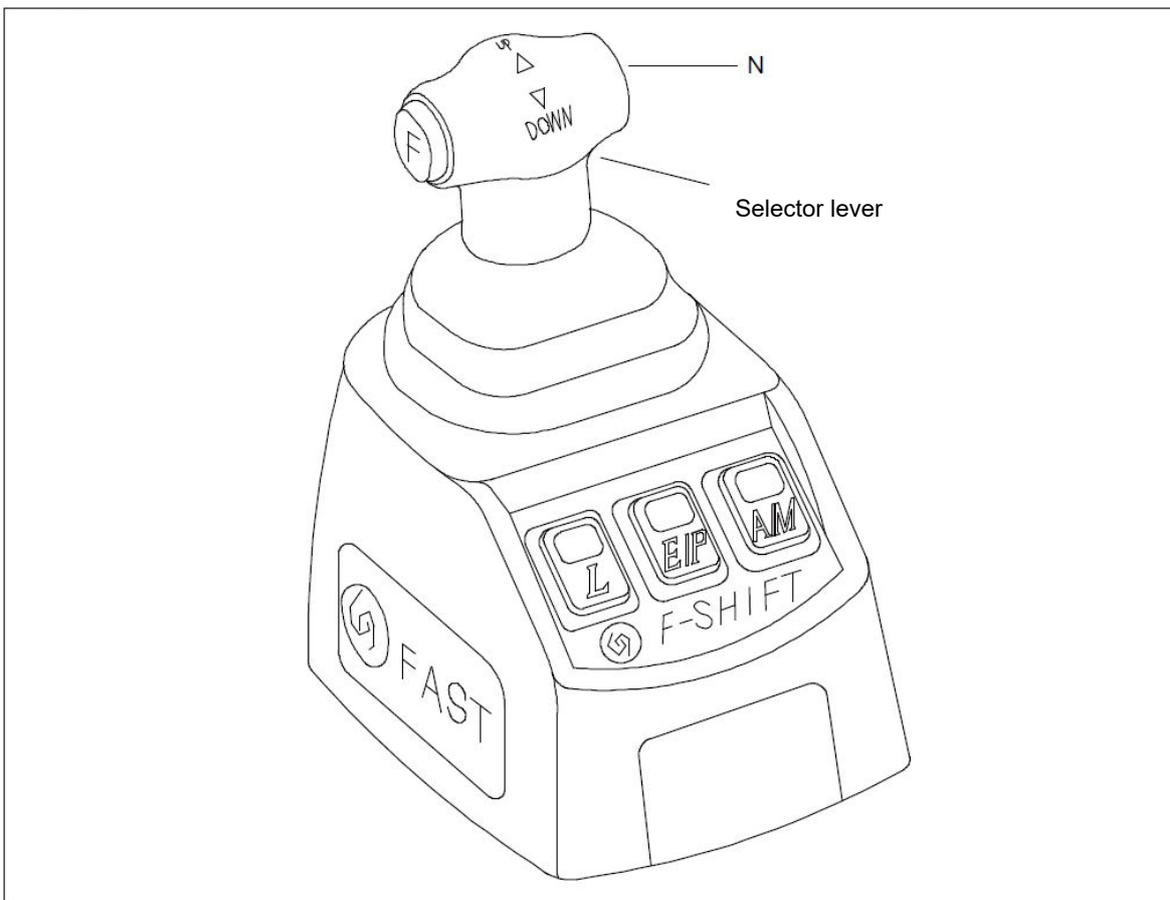


Figure 3-47 Range selector

b) Manual mode <M>

- In this mode, all gear requests are sent by the driver. That is to say, the driver will select the gear manually.
- Press and hold the function button and tilt the selector lever forward or backward once to upshift or downshift one gear.
- Tilt the selector lever forward or backward once to upshift or downshift at least one gear.
- Press the function button for several times (multiple upshift or downshift). Then release the function button and tilt the selector lever forward or backward. If the gear

selected is proper, the system will change over to the selected gear. If the gear selected is improper, the system will select the gear automatically.

- The AMT automatically do the following operations:
 - Shifting the gear
 - Controlling the clutch.

CAUTION

If the gear requested by the driver is not suitable for the current driving condition, the AMT will reject the request or change over to a proper gear automatically.

WARNING

When the parking brake is released, the vehicle starts to roll immediately. Therefore, brake the crane with the service brake or accelerate with engine control.

- c) Fault diagnosis display

For the FAST transmission gear position display, refer to Figure 3-48.

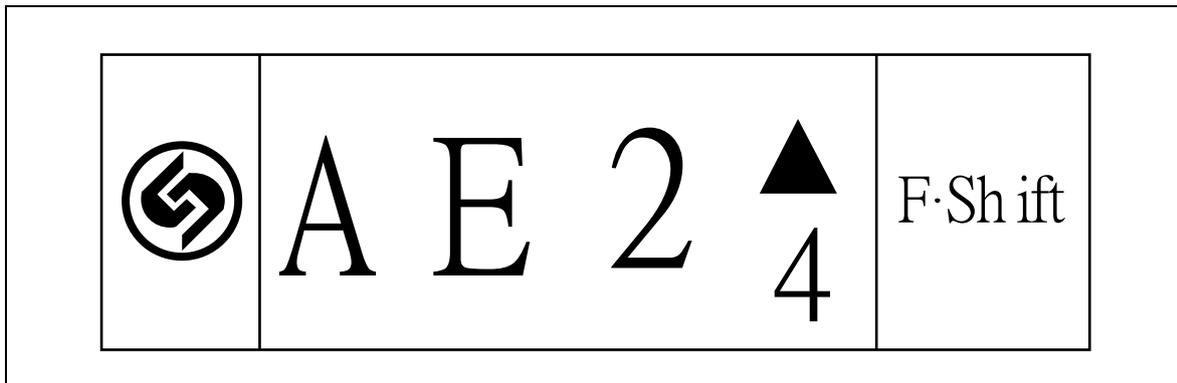


Figure 3-48 FAST transmission gear position display

Position “A”: display of A or M

Position “E”: display of E or P (display of L when the L mode is selected)

Position “2”: display of the current gear (neutral: N, reverse: R1 – R2, forward: 1 – 12)

Position “4”: display of the selected gear (The up arrow above the digit 4 flashes for upshifting. If the down arrow appears above the digit 4, it flashes for downshifting. If you do not need to shift the gear, the position “2” and “4” all display the current gear.)

When the AMT has a malfunction, it will send CAN information to light up the warning light on the independent display. Refer to Figure 3-49.



Figure 3-49 Transmission gear position fault diagnosis display

As shown in Figure 3-49:

- The current gear: Neutral
- The selected gear: 10
- Error code: 520199.

When the transmission has no malfunction, the background lighting color of the display is green. When the transmission has a malfunction, the background lighting color of the display will change accordingly. Meanings of the colors are as follows:

- Red:
 - The buzzer sends out fast acoustic warning and the AMT fault information shows on the display.
 - The AMT system has a serious failure and you must stop the crane immediately. Do not drive the crane until the failure is removed.
- Yellow:
 - The buzzer sends out acoustic warning for 20 seconds and then stops. The AMT fault information shows on the display.
 - The AMT system has a failure but the crane can drive safely. You should examine the vehicle to find the part that caused the malfunction.

For meanings of the error codes, refer to *Appendix 1 Error code list* in the *Operating Instructions for 12JZSD240A transmission*.

d) E/P mode

- The ECO mode <E> and Power mode <P> are valid only under the Automatic mode <A> of AMT.
- Under the Power mode <P>, the automatic gear selection of the AMT will make the engine output the maximum power and make the crane with the best accelerating performance.
- Under the ECO mode <E>, the automatic gear selection of the AMT will make the engine run with the lowest fuel consumption.
- When the crane drives on a long steep ascending gradient with heavy load, it is strongly recommended to use the Power mode <P>.

- You cannot combine all the advantages of the Power mode <P> and the ECO mode <E>. For the selection of the two modes, you can press the E/P button on the range selector to change over the two modes according to the actual road conditions.
- e) The current operating mode shows on the display. The default mode is the ECO mode <E>. Press the E/P button, namely changing into P mode. If you press the E/P button again, the transmission will go back to the ECO mode.
- f) Low speed mode <L>
 - This mode is used for assisting difficult crane start up due to vehicle overloading or under the limit OMs (the work area is soft or muddy, etc.).
 - When you start up the crane under this mode, the AMT will engage the clutch and start up the crane after the engine has a high RPM.
 - You can only activate this mode by pressing the L button on the range selector when the current gear is R1, N, 1, 2 and 3. After you enter this mode, 3 is the highest forward gear and the R1 is the only reverse gear.
 - You can exit this mode after you press the L button again.



When you start up the vehicle in the low speed mode, the engine RPM is high and the clutch will be worn increasingly when you engage the clutch. Only select this operating mode when absolutely necessary. Frequent use of the function will make the clutch wear in an early stage.

- g) For other operating instructions, refer to the *Operating Instructions for Fast AMT transmission*.



- (1) **Do not select the reverse "R" if the vehicle does not completely stop. Therefore, stop the vehicle at first and then select the reverse "R".**
- (2) **If you select the neutral "N" in drive, the power transmission will be cut off and the retarder will be invalid.**

3.3.5 Important control instruments while driving

- a) Examining the engine oil pressure

Engine oil pressure display on bar chart in display unit of 1.3 bar – 5.5 bar.



In case of low oil pressure (the engine oil pressure is below 1 ± 0.15 bar), there is no engine lubrication. This results in engine damage. Immediately bring the crane to a standstill and turn off the engine. Examine the lubricating system.

b) Examining the compressed air supply

The two pointers resp. display the pressure of main brake air reservoir for the front axle and the pressure of main brake air reservoir for the intermediate and rear axles.



If the pressures of the air reservoirs are below 0.55 MPa, the warning light “Brake pressure low” will light up and the buzzer will send out alarm simultaneously. Immediately bring the crane to a standstill and rectify the cause of the defect. Otherwise, it is very dangerous.

c) Examining the fuel reserve

Fuel quantity display on bar chart in 1 or 0

1 means the fuel tank is full. 0 means the fuel tank is empty.



If the pointer is near “0”, refill the fuel reserve. Do not drive when the fuel tank is empty, or the fuel system will have to be vented.

d) Examining the coolant temperature

The coolant temperature displays on the water thermometer. In normal conditions, the engine coolant temperature is between 85°C and 95°C. Do not let the coolant in high temperature condition for a long time.



If the pointer points to the range (above 100°C) for a long time while driving, immediately bring the crane to a standstill and examine the engine cooling system. Otherwise, this will result in engine damage.

e) Examining the fluid level in the AdBlue tank

You can examine the fluid level in the AdBlue tank from the main screen of monitor.



The warning light “Engine defects” will illuminate and the engine will limit the output torque when AdBlue in the AdBlue tank is lower than 14%. Add AdBlue to the correct level to solve the problems. The maximum amount of AdBlue in the tank is 90% of the tank capacity.

3.3.6 Off-road driving

This vehicle is equipped with differential locks for driving off-road, on tracks and in winery conditions.

This vehicle is equipped with such off-road drive devices for driving off-road, on tracks and in winery conditions:

- Longitudinal differential lock in transfer case
- Longitudinal differential lock for axle 4
- Transversal differential locks for axles 2, 4 and 5.



Add the differential locks when the vehicle is stationary!



In order to avoid damage to drive axles, make sure that the following prerequisites are met:

- (1) **Only add the differential locks when the vehicle is stationary!**
- (2) **Do not add the differential locks when the wheels are turning! Otherwise, risk of serious damage to the drive axles!**
- (3) **Do not start jerkily and do not drive at full throttle!**
- (4) **Only drive on straight routes and do not attempt to corner!**
- (5) **Only drive on difficult terrain (e.g. sand, slush, loose or slippery subsoil etc.) with differential locks.**



Danger of damage to the drive axles and entire drive train! Considerable damage can be caused by driving on solid subsoil with good grip when a differential lock is on. Turn the differential locks off as soon as possible.

3.3.7 Driving on long ascending gradients

When the crane is driving on long ascending gradients, it is suggested that apply the Power mode <P> of the transmission. And apply the low gear when the vehicle travels on the ascending slope.

 **DANGER**

Do not drive on long ascending gradients at high speed. Otherwise, components in the power system and the drive system will be damaged.

Besides, the engine RPM is low and the load on the engine is heavy, resulting in excessively high coolant temperature.

3.3.8 Maneuvering

Refer to Item f) Low speed mode <L> in 3.3.4 Transmission operation.

 **WARNING**

In maneuvering mode, the force of clutch will be increased. Only select this operating mode when absolutely necessary. Lower gear is recommended to reduce clutch force.

Do not apply maneuvering mode when the vehicle is struck.

3.3.9 Steering operation

When you go into a corner, look around before you turn the steering wheel. Turn the steering wheel after you make sure that it is safe to move. Then put the transmission in a lower gear and apply a small quantity of pressure on the service brake.

 **DANGER**

- (1) The steering wheel has a mechanical limit. Do not continue to turn the wheel when at the limit. Do not keep the wheel at the limit for more than 5 seconds.**
- (2) If the vehicle is steered insufficiently, decrease the speed slowly while you turn the steering wheel in the same direction as the turn.**
- (3) If you over-steer, release the engine control pedal or slightly depress the service brake pedal while you turn the wheel in the opposite direction of the turn.**
- (4) Do not turn the steering wheel quickly in one direction unless it is an emergency. Make your turns smoothly to keep the crane laterally stable. When you complete the turn, lightly and immediately turn the steering wheel to neutral to prevent an unstable condition.**
- (5) Decrease the speed of the vehicle and move down the transmission gear if you have a sharp turn.**
- (6) The steering angle for axle 1 should not exceed 20° when the suspension is in neutral.**

3.3.9.1 Road steering

Press the button "Switch on 'Road steering' operating mode" to activate the "Road steering" operating mode.

In this mode, the front axles 1 and 2 are mechanically steered by the steering wheel. The rear axles 4 and 5 are steered depending on the speed and the steering of axle 1.

Steer axles 4 and 5 are steered depending on the steering of axle 1 when the vehicle speed is below 30 km/h.

Steer axle 4 is moved back to the 0° position when the speed is between 30 km/h and 55 km/h. And axle 5 is steered depending on the steering of axle 1.

Steer axles 4 and 5 are moved back to the 0° position when the speed exceeds 55 km/h.

See Figure 3-50.

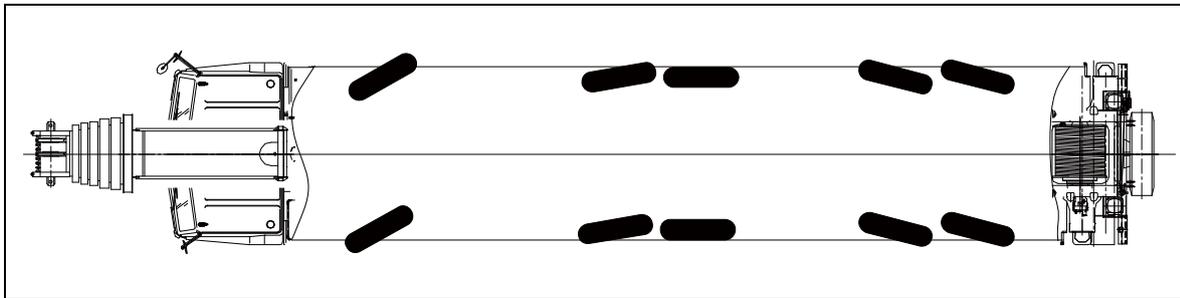


Figure 3-50 Road steering



In this operating mode, the steering of the vehicle is dependent upon the vehicle speed, thus providing the vehicle with good maneuverability at low vehicle speed and with high stability at high vehicle speed. Therefore, road steering is strongly recommended.

3.3.9.2 Rear axles affixed for straight travel

In the "Rear axles affixed for straight travel" operating mode, only the front axles 1 and 2 are steered by the steering wheel. The rear axles 3, 4 and 5 are locked in 0° positions. See Figure 3-51.

Make sure the following prerequisite is met before selecting this mode:

The maximum driving speed is limited to 20 km/h.

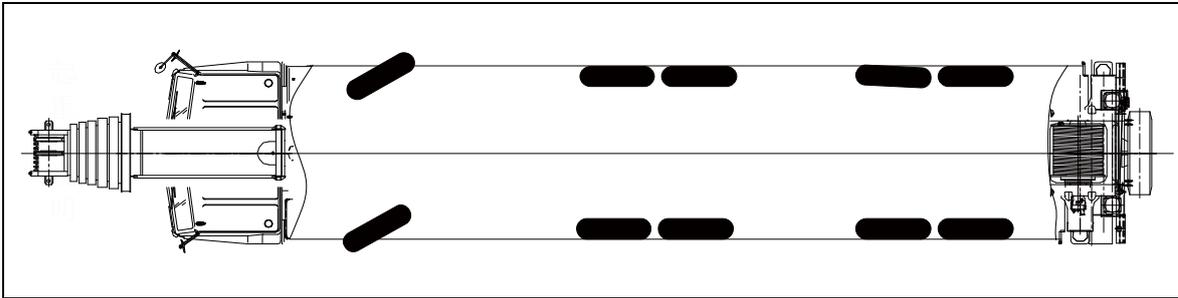


Figure 3-51 Rear axles affixed for straight travel

Press the button "Switch on 'Rear axles affixed for straight travel' operating mode" to activate the "affixed for straight travel' operating mode.

This mode is suitable for moving crane from narrow space and the defective rear axles.

After the crane is moved to required position or when the problems of the defective rear axles are rectified, move axles 1 and 2 back to 0° position by the steering wheel.

Change over to road steering.

3.3.10 Braking operation

The brake system consists of service brake, auxiliary brake and parking brake (emergency brake). You can also use the parking brake to park the vehicle in normal conditions and on slopes.

3.3.10.1 Operation

a) Service brake

There are several cases of braking. For details, please refer to the following instructions:

- 1) Normal brake: during driving, release the engine control pedal ahead to slow down the vehicle according to the actual road conditions (with regard to the road surface, traffic, etc.), and then continuously or intermittently apply the service brake to slow down stably or stop the vehicle.
- 2) Slow brake after rapid brake: when there is an accident in front, apply the service brake rapidly and then apply it again slowly. Release the pedal slowly according to the distance away from the accident spot and shift gear in accordance with the actual driving speed. At last, apply the engine control pedal to drive at normal speed.
- 3) Cadence brake: apply the service brake and release it. Repeat the operation to decelerate the vehicle gradually. The operation should be very gentle.
- 4) Rapid brake: in a sudden emergency, release the engine control pedal immediately and apply the service brake jerkily (sometimes apply the parking brake at the same time) to bring the vehicle to a standstill as soon as possible. As a result, the accident will be avoided.



When you make many hard brake stops, the tire, brake drum and brake lining wear prematurely and the service life of each part shortens. Use more caution when the roads are wet or frozen.

b) Auxiliary brake

The auxiliary brake includes the engine in-cylinder brake.

When you drive the vehicle downwards a long slope, use the auxiliary brake. The vehicle decelerates via engine instead of service brake.

The auxiliary brake has the advantages below:

- To improve driving safety.
- To ensure the brake performance and to avoid brake failure.

Note:

When you depress the service brake pedal frequently, the brake drum will be overheated.

How to activate the auxiliary brake:

- Release the engine control pedal.
- Jog the right-hand steering column switch backwards.

Result:

The engine brake is activated and the control light “Engine brake” lights up.



You can deactivate the engine brake after you depress the engine control pedal and press the engine brake switch.

c) Parking brake (emergency brake)

If the service brake fails or there is no time to apply the service brake during driving, you can pull the hand lever of parking brake backwards to lock the vehicle. To release the parking brake, pull back the hand lever of parking brake as far as the stop in the hand lever's longitudinal direction and push forward.



- (1) **You can also use the emergency brake (namely parking brake) to park the vehicle in normal conditions or on slopes.**
- (2) **Do not start the vehicle unless the parking brake is released and the control light “Parking brake closed” extinguishes.**

3.3.10.2 Points for attention

- a) After the engine control pedal is released during driving, do not step on the service brake pedal when there is no necessity to brake the vehicle.
- b) Do not apply the emergency brake when the vehicle is driving on a narrow, frozen or muddy road or in a rainy / snowy day. Under the conditions, such as crossing a railway, driving under a bridge, or driving on a road with pools of water, or one side of the vehicle is driving on frozen or muddy road, avoid applying the service brake as much as possible. Otherwise, the vehicle may be shut down suddenly.
- c) After driving across a road with pools of water, depress the service brake pedal for several times to eliminate the water on the braking shoe so as to ensure the brake performance.
- d) Before you drive on a long descending gradient, shift the gear lever to the low gear range. Under this condition, the driving speed is mainly controlled by the traction resistance from the engine and with the assistance of the in-cylinder brake and the service brake. Do not let the vehicle move forward when transmission is in the neutral position.
- e) When the parking brake is used as the auxiliary brake, do not pull the hand lever to its limit position. When you park the vehicle under any conditions, pull back the parking brake hand lever into locking position, especially parking the vehicle on a slope. Otherwise, risk of fatal injury and accident!
- f) The reasonable change interval of brake liquid is 12 months or 10000 km.
- g) The response time from depressing the brake pedal to the adverse brake chamber is 0.55 s.

3.3.11 PTO operation

Make sure the following prerequisites are met before engaging the PTO:

- Apply the parking brake.
- The suspension is level.
- The axle suspensions are locked.
- Activate the button "Switchover creeper gear / road gear" to apply road gear.
- Axle 1 is moved back to the 0° position.
- Activate the "Road steering" mode.
- Make sure the pressure shown on the air pressure gauge is above 7.5 bar.
- Open the shutoff gate valve of hydraulic oil tank of superstructure.
- Activate on the power source switch of outriggers to operate the outriggers.

After the outriggers are in position, come back to the driver's cab to carry out the power takeoff operation.

The PTO operation consists of one-button automatic power takeoff and semi-automatic power takeoff.

One-button automatic power takeoff

And activate the PTO switch. After that, the display of transmission gears will indicate "M 6 6"

firstly (namely shift into Gear 6 firstly), and next flash between “N” and “6”, and then indicate “M N N” (namely skip back to Gear N), and finally flash between “N” and “6” again. After several seconds, the PTO control light of the LCD illuminates and the engine speed increases to 750 RPM. And the power takeoff output shaft of transmission rotates at this time. And thus, this indicates that it is successful in taking the power off.

Semi-automatic power takeoff

Shift the gear lever into Gear 6 before pressing the function key F. And then, activate the PTO switch. After that, the display of transmission gears will flash between “N” and “6”, and then indicate “M N N” (namely skip back to Gear N), and finally flash between “N” and “6” again. After several seconds, the PTO control light of the LCD illuminates and the engine speed increases to 750 RPM. And the power takeoff output shaft of transmission rotates at this time. And thus, this indicates that it is successful in taking the power off.

Exit

Switch off all of superstructure OMs and switches after finishing the superstructure operation. At this time, the superstructure is deenergized. Come back to the driver's cab and turn off the PTO switch directly. And the display of transmission gears will indicate “AE N N”. The engine speed decreases to 650 rpm. The PTO control light extinguishes. At this time, it is successful in existing the power takeoff.



- (1) Firstly start the engine to warm the vehicle and make sure that the water temperature is above 65°C or more. And then, engage the PTO for crane operation.
- (2) In winter or the cold weather (the air temperature is -10°C or below), replace the low temperature oils and liquids in time.
- (3) Make sure that the multifunctional fuel filter is clean.
- (4) Turn off the switch “Engine in-cylinder brake” before engaging the PTO. Otherwise, the superstructure is apt to stop due to insufficient power when superstructure movement performs and after the PTO is engaged.
- (5) Engage the PTO in the driver's cab firstly, and then engage the PTO in the operator's cab.
- (6) The transmission gear display will pop up the following codes (including but not limited to) during the process of the power takeoff:
 - 520593-2
 - 520802-14
 - 520803-14
 - 520805-14
 - 520806-14
 - 520810-14
 - 520813-14

~ 520818-14.

For example, when the power takeoff fails, switch off the electricity. Switch on the electricity and engage the PTO again after 3 -5 minutes.

Note:

The code only the prompt during the process of the power takeoff and doesn't affect the power takeoff function.

- (7) When the power takeoff fails, exit the PTO switch. Switch off the electricity and stop the engine. Do the items follow after 3- 5 minutes:
 - ~ Switch on the electricity
 - ~ Turn on the ignition starter switch
 - ~ Engage the PTO.
- (8) Before engaging the PTO and switching on the ignition starter switch, make sure that the shutoff gate valve of the superstructure hydraulic oil tank is opened.
- (9) Under the one-button automatic power takeoff mode, it takes 32 sec. to take the power off. During this period, the small display field at the top right corner of the LCD will show "The PTO operation is going on. Do not carry out the other operations." The display field at the top right corner of the LCD will show "Taking the power off is successful." after the power has been taken off successfully. Do not carry out any operations during the process of taking the power off. After that, the PTO control light of the LCD illuminates. Subsequently, carry out the superstructure operation.
- (10) Do not switch off the ignition starter switch directly when the PTO switch is not switched off.
- (11) After activating the PTO switch to take the power off, you cannot disconnect the PTO switch until the PTO is completely engaged. Do not disconnect the PTO switch directly when the power takeoff operation is not completely successful.
- (12) If the above-mentioned situations (items (10) and (11)) occur, disconnect the PTO switch and continually press the neutral key of the transmission for several times. And then, the transmission goes back to Neutral. Electrify the vehicle and take the power off after cutting off the power supply of the ignition starter switch for 3 - 5 min.
- (13) Click the icons "Power Take Diagnosis" in the main interface. And enter into the interface "Power Take Diagnosis". Refer to Figure 3-52.

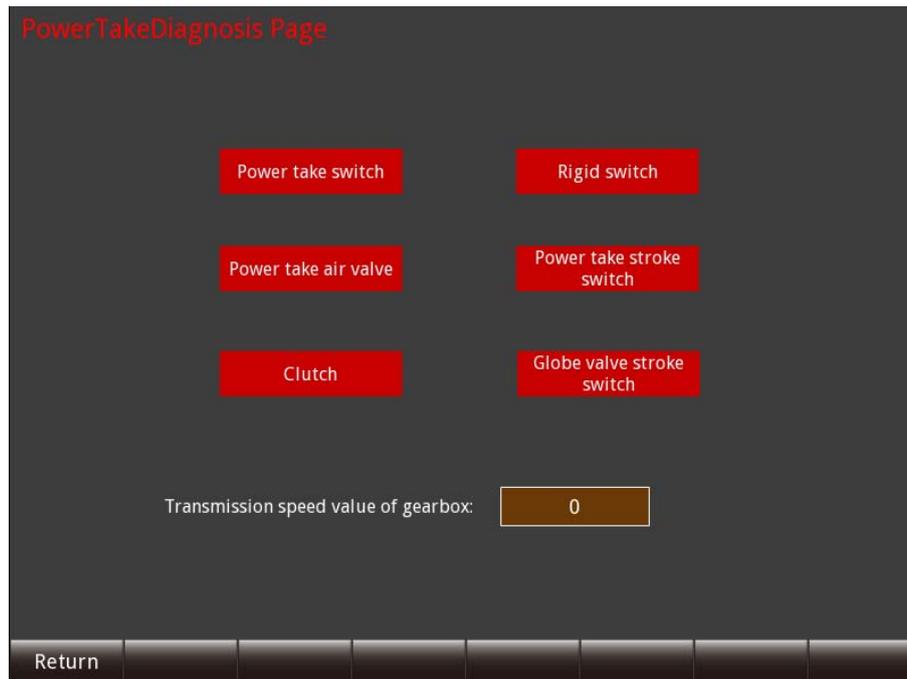


Figure 3-52 Power takeoff diagnosis interface

In the display screen, you can check the situation of the power takeoff process. When the icon turn green, the movement is valid. The operator can judge the current power takeoff movement process. Firstly, it means that the axle suspension is locking and the stroke switch of the shutoff gate valve of the superstructure is opened when the icons “Rigid switch” and “Stroke switch of shutoff gate valve” turn green. At this time, you can engage the PTO. Activate the PTO switch (turn green), the air pressure is higher than 7.5 Bar. The air valve of the power takeoff moves (turn green). After the air valve moves to the specified position, the stroke switch of the PTO takeoff turns green. And then, the clutch starts to move. The clutch is engaged successfully (turn green). The rotating speed of the input shaft of the transmission is shown about 600, namely the power takeoff is finished.

3.3.12 Towing

General towing regulations



The following towing regulations must be adhered to:

- (1) Do not tow the vehicle when it doesn't have the fault!
- (2) Release the parking brake and place the selector lever in neutral when towing, or the brake system will be damaged.
- (3) When towing, the speed must always remain below 20 km/h.
- (4) Use the towing coupling to tow the vehicle.
- (5) Only tow with a tow bar.

(6) Turn on the emergency flash system and the headlight.

a) When the engine or the transmission is defective:

If the engine cannot be started, a compressed air supply must be established from the towing vehicle to the mobile crane. The towing vehicle supply compressed air to the mobile crane to be towed via a hose.



The supply pressure of the compressed air brake system of the mobile crane to be towed must be at least 0.6 MPa.

After you turn off the engine, keep the vehicle speed between 5 km/h and 10 km/h.

b) When the engine can work:

1) And the transfer case is damaged:

- Disconnect the propeller shafts from the transfer case to the drive axles.
- Disconnect the propeller shafts from the transmission to the transfer case.
- Shift the gear lever to neutral position.
- Allow the engine to run at idling speed.

2) And the driving medium of the drive axles is damaged:

- Remove the damaged one.



Only authorized and specially trained personnel can carry out towing arrangements in case of damage to the drive axles.

3.3.13 Cruise operation

a) When the cruise works (activate by key +/-, namely enter into the cruise state via key SET + -)

- 1) Min. gear: gear 9 and above
- 2) Engine working range: 1200 rpm - 2100 rpm
- 3) Inching increase (tip up): 2 km/h
- 4) Inching decrease (tip down): 1.5 km/h
- 5) Min. starting vehicle speed when the cruise works: 45 km/h
- 6) Max. starting vehicle speed when the cruise works: 75 km/h
- 7) Vehicle speed range when the cruise works: 45 km/h - 75 km/h

b) When the cruise works, there exists large potential safety hazard because the vehicle speed is not controlled by the pedal. Therefore, make sure that there is a reliable way to cancel the cruise operation.

There are 3 ways to cancel the cruise operation.

- 1) Step on the brake pedal.

- 2) Press the cruise exit switch upwards.
 - 3) Activate the engine auxiliary switch.
- c) The following errors will make the cruise invalid.
- 1) Error of the cruise control switch
 - 2) Error of the brake switch
 - 3) Error of the accelerator pedal
 - 4) Error of the engine speed monitor
 - 5) Error of the vehicle speed sensor
 - 6) Error of supercharging pressure sensor
 - 7) Error of rail pressure sensor
- d) The operation procedure of the cruise in driving order are as follows:
- Electrified: the cruise can be activated (NEUTR)
- Cruise activation: when the certain conditions (the gears, the vehicle speed and the rotating speed) are met, activate the cruise via the key (set+) or (set -). And then, the cruise is in a hold state. At this time, you can adjust the cruise vehicle speed.
- Acceleration (acc): press and hold the key (set+). And the rotating speed at the cruise set point will increase. Meanwhile, the vehicle speed will increase accordingly.
- Deceleration (dec): press and hold the key (set -). And the rotating speed at the cruise set point will decrease. Meanwhile, the vehicle speed will decrease accordingly.
- Inching increase (tip up): press the key (set +) briefly. And the rotating speed at the cruise set point will increase according to the calibration value. Meanwhile, the vehicle speed will increase accordingly.
- Inching decrease (tip down): press the key (set -) briefly. And the rotating speed at the cruise set point will decrease according to the calibration value. Meanwhile, the vehicle speed will decrease accordingly.
- e) Cruise OFF
- If you need to exit the cruise completely, use the key OFF (press the switch SET forwards once) to deactivate the cruise. If you have used the key OFF to exit the cruise, it is impossible to use the key resume (press the switch SET backwards once) to enter into a new cruise. But you can still use the key (set+) or (set-) to enter into a new cruise. Step on the clutch pedal and the brake pedal, and operate the in-cylinder brake handle to exit the cruise. And the prerequisite is that all kinds of the corresponding switches are connected to ECU efficiently. After exiting the cruise, you can press the key resume (press the switch SET backwards once) to resume. And the prerequisite is that the cruise activation conditions still can be met when the key resume is pressed.
- You can also use the accelerator pedal to exit the cruise. If the accelerator signal is detected during the process of cruise, ECU will compare the cruise torque with the pedal

torque. And take the larger value to satisfy the overtaking demand in the process of cruise. After the accelerator pedal is released, the cruise will automatically resume.

 **CAUTION**

(1) The cruise operation has certain limitations.

Do not use the cruise when the following situations occur:

- The stop is longer.
- The gradient is larger.
- The road condition is bad.

Otherwise, the cruise will be locked because that exit the cruise due to too large acceleration or deceleration. And the driving circulation cannot enter into the cruise again this time. The cruise function can be resumed after ECU be deenergized and reset.

- (2) The realization condition of the cruise function is comparatively strict. Therefore, when the cruise function cannot be activated, you should check whether the state of the switch is normal firstly.**
- (3) Do not press the cruise switch for a long time. When you press and hold the switch for 30 second or more, the diagnosis light will stay illuminated. The display switch will be seized and report the flash code 341. Therefore, pay a special attention to this point during the usage process. Make sure that reset the switch after the cruise operation is finished.**

3.3.14 Driving with equipment in place

The crane can drive with equipment in place, such as auxiliary winch, auxiliary hook and outrigger pads etc., for short distance driving. Make sure that the following prerequisites are met:

- a) The axle suspension system must be leveled.
- b) The axle suspension must be locked.
- c) The superstructure is correctly positioned.
- d) The superstructure is secured with pins (and the slewing table is secured with pins).
- e) The outrigger oil cylinders are correctly positioned.

 **WARNING**

Obey all of the safe operation rules and the technical notes and guidelines before the crane travels with the equipments in place. Otherwise, risk of accident! The crane may topple over!

Do not drive with the counterweight and the hook above 50 tons. Otherwise, the crane will tip over.

3.3.15 Finishing driving operations

- a) Stopping
 - 1) Brake the crane until it comes to a standstill.
 - 2) The selected drive range can remain switched on.
 - 3) Use the service brake or parking brake to make sure that the crane does not roll away.



If you have stopped the crane for more than 1 minute, shift the transmission to the neutral position to avoid wear on the clutch.

- b) Stopping the vehicle when the engine is running
 - 1) Brake the crane until it comes to a standstill.
 - 2) Shift the transmission into the neutral position.
 - 3) Apply the parking brake and the control light "Parking brake closed" illuminates.

3.4 Outrigger operation

The crane is equipped with 4 outriggers. Their outrigger boxes are connected with the chassis frame and the 2 sections of sliding beams can extend and retract synchronously. A support control unit with buttons is attached to both sides of the vehicle (behind the front outrigger box) for controlling 4 sliding beams to extend and retract simultaneously or independently.

Illustration – Sliding beam sections 1 and 2 both extended (Refer to Figure 3-53)

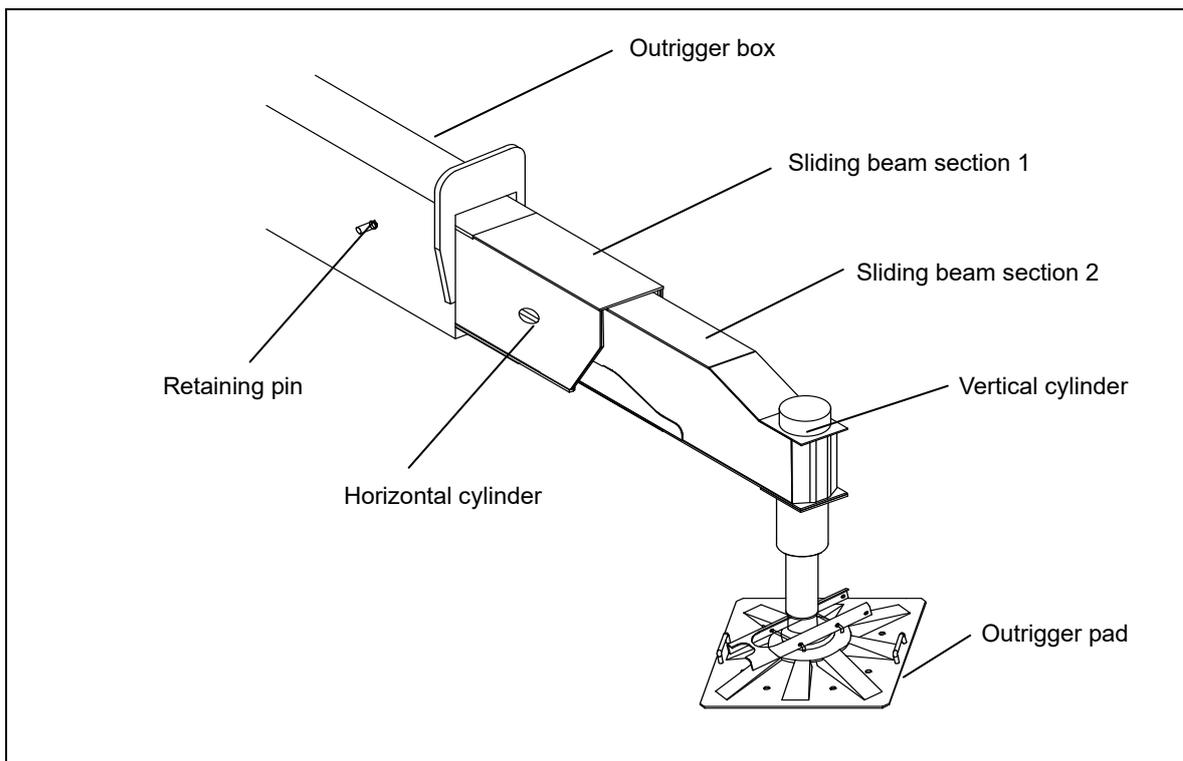


Figure 3-53 Sliding beam sections 1 and 2 both extended



Extend the outriggers before crane operation.

Make sure that you do all of the work on level ground that is hard. The ground must hold more than the load bearing capacity.

Use material (such as wooden timbers) below the outrigger pads if the work area is soft or not flat.

3.4.1 Install and remove the outrigger pads

- a) Installing the outrigger pad

Before you extend the outriggers, remove the socket pin from the outrigger pads and pull out the outrigger pads. When the hole aligns with the vertical cylinder, install the socket pin.

b) Removing the outrigger pad

After you fully retract the outriggers, remove the socket pin and push in the outrigger pad until it is in the correct position. Install the socket pins.

Refer to Figure 3-54.

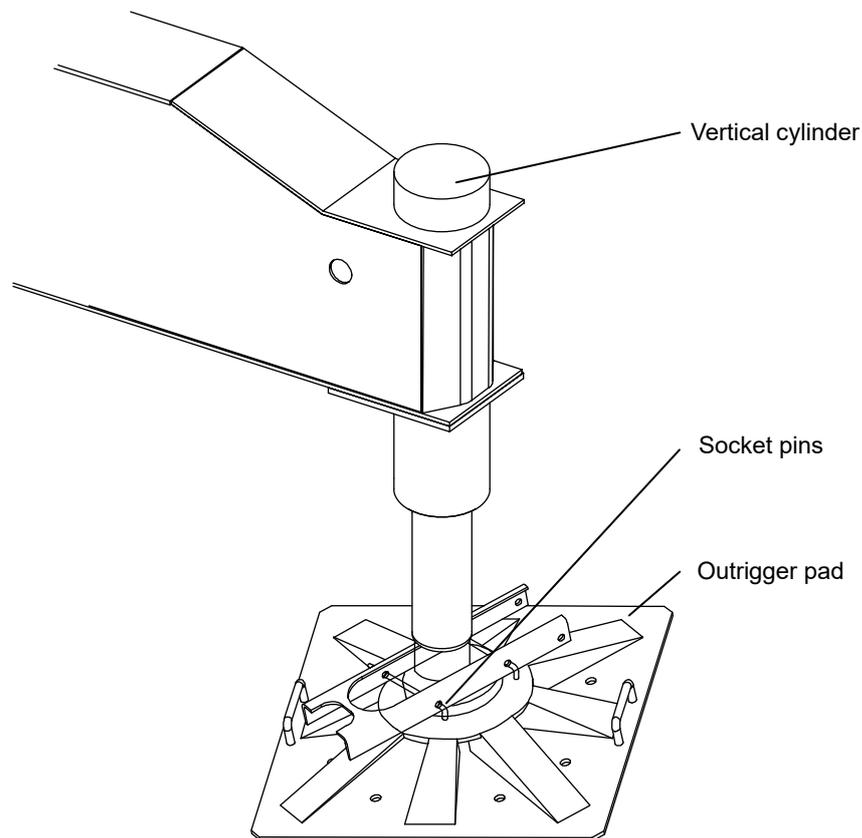


Figure 3-54 Outrigger pad

3.4.2 Extend and retract the outriggers

The two support control units with buttons are attached to both sides of the vehicle. Their functions are the same and the layouts of their buttons are symmetrically arranged. The extending / retracting of the outrigger horizontal cylinders and vertical cylinders, engine on / off and engine RPM regulation, etc. can be controlled simultaneously or independently. The inclinometers on the center of the units display the crane's deviation (at the slewing bearing). The two support control units are connected by cables. The signals of the right support control unit (auxiliary control unit) are transmitted to the left support control unit (main control unit) via the cables, and then to the valves and engine controllers etc.

Note:

Extend the outriggers before crane operation.

Make sure that you do all of the work on level ground that is hard. The ground must hold more

than the load bearing capacity.

Use material (such as wooden timbers) below the outrigger pads if the work area is soft or not flat.

For the left support control unit, refer to Figure 3-55.

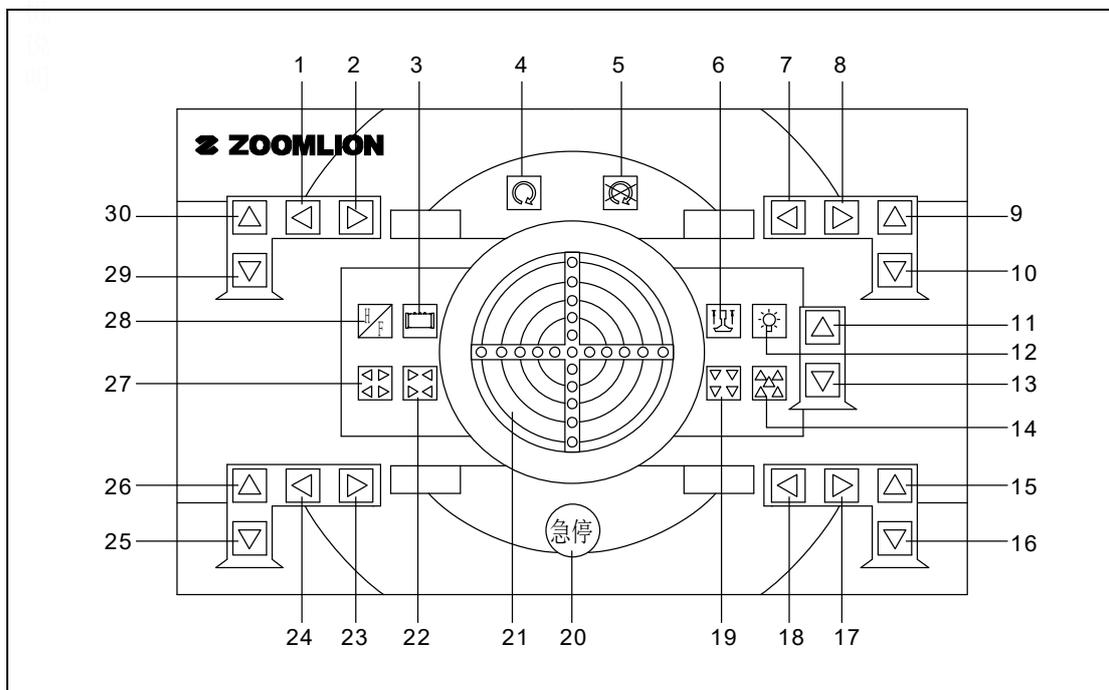


Figure 3-55 Left support control unit

Pos.	Description	Pos.	Description
1	Extend right front horizontal cylinder	16	Extend left rear vertical cylinder
2	Retract right front horizontal cylinder	17	Extend left rear horizontal cylinder
3	Changeover engine RPM / idle speed	18	Retract left rear horizontal cylinder
4	Engine on	19	Extend all vertical cylinders
5	Engine off	20	Emergency stop
6	Force-retract vertical cylinders	21	Inclinometer
7	Retract right rear horizontal cylinder	22	Retract all horizontal cylinders
8	Extend right rear horizontal cylinder	23	Retract left front horizontal cylinder
9	Retract right rear vertical cylinder	24	Extend left front horizontal cylinder
10	Extend right rear vertical cylinder	25	Extend left front vertical cylinder
11	Retract the 5 th outrigger	26	Retract left front vertical cylinder
12	Background lighting	27	Extend all horizontal cylinders
13	Extend the 5 th outrigger	28	Changeover outrigger full / intermediate extension
14	Retract all vertical cylinders	29	Extend right front vertical cylinder
15	Retract left rear vertical cylinder	30	Retract right front vertical cylinder

For the right support control unit, refer to Figure 3-56.

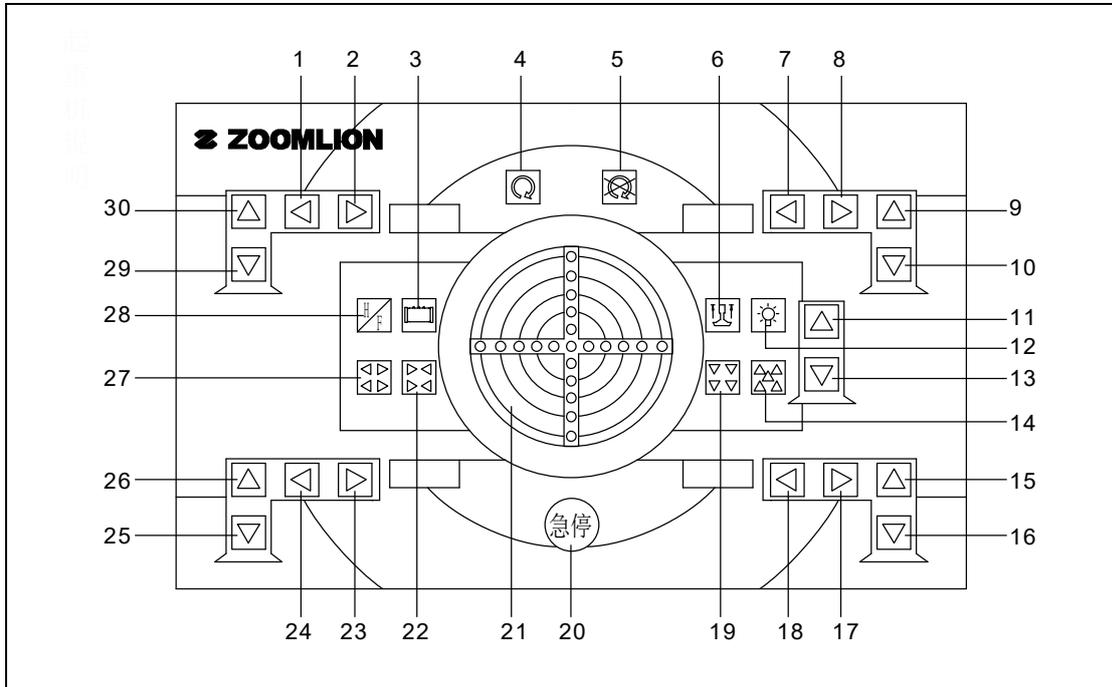


Figure 3-56 Right support control unit

Pos.	Description	Pos.	Description
1	Extend left rear horizontal cylinder	16	Extend right front vertical cylinder
2	Retract left rear horizontal cylinder	17	Extend right front horizontal cylinder
3	Changeover engine RPM / idle speed	18	Retract right front horizontal cylinder
4	Engine on	19	Extend all vertical cylinders
5	Engine off	20	Emergency stop
6	Force-retract vertical cylinders	21	Inclinometer
7	Retract left front horizontal cylinder	22	Retract all horizontal cylinders
8	Extend left front horizontal cylinder	23	Retract right rear horizontal cylinder
9	Retract left front vertical cylinder	24	Extend right rear horizontal cylinder
10	Extend left front vertical cylinder	25	Extend right rear vertical cylinder
11	Retract the 5 th outrigger	26	Retract right rear vertical cylinder
12	Background lighting	27	Extend all horizontal cylinders
13	Extend the 5 th outrigger	28	Changeover outrigger full / intermediate extension
14	Retract all vertical cylinders	29	Extend left rear vertical cylinder
15	Retract right front vertical cylinder	30	Retract left rear vertical cylinder

How to extend outriggers with support control unit (Take the left support control unit as an example):

! CAUTION

Press down the button "Outrigger power source" on the center console to switch on the outrigger power source (For detailed information, refer to Section 3.1.4.1). Only when the left and right outriggers control boxes are energized and the power control light illuminates, the following procedures can be activated. Make sure that both emergency stop buttons are not pressed down and the superstructure power supply is not switched on before you operate the outriggers with the support control unit.

- a) Put the outrigger pad to working position according to Section 3.4.1.
- b) Remove the retaining pins from the sliding beams (Refer to Figure 3-57).

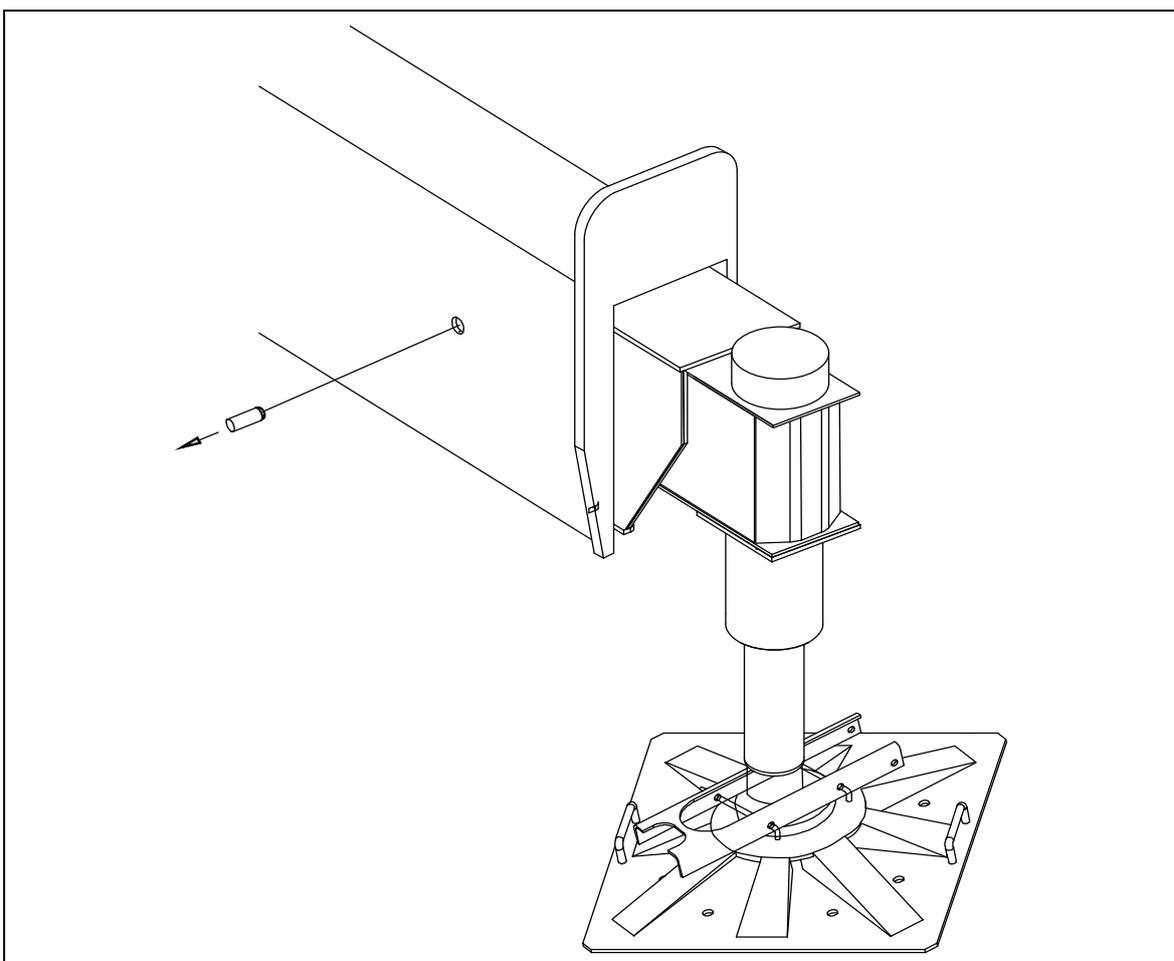


Figure 3-57 Retaining pins removal

- c) Open the cover of support control unit with its key.
- d) Press down the button "Engine on" to start the chassis engine and the hydraulic system.
- e) Press corresponding buttons to extend the right rear sliding beam and the right front sliding beam. Release the buttons until the sliding beams are extended to the required position.

Press corresponding buttons to extend the left rear sliding beam and the left front sliding beam. Release the buttons until the sliding beams are extended to the required position.

Note:

You can also press the corresponding button to extend all sliding beams simultaneously.

- f) Press corresponding buttons to extend the right front, left front, right rear and left rear vertical cylinders to lift the crane up.

Note:

You can also press the corresponding button to extend all vertical cylinders simultaneously.

Press corresponding buttons to retract the right front, left front, right rear and left rear vertical cylinders to lift the crane up.

Note:

You can also press the corresponding button to retract all vertical cylinders simultaneously.

- g) Examine whether the crane is level with the inclinometer (Refer to Figure 3-58). Inclination angle should be no more than 0.1° . Press buttons to align the crane horizontally. If the vehicle is not horizontal, retract or extend the outrigger to level the crane.

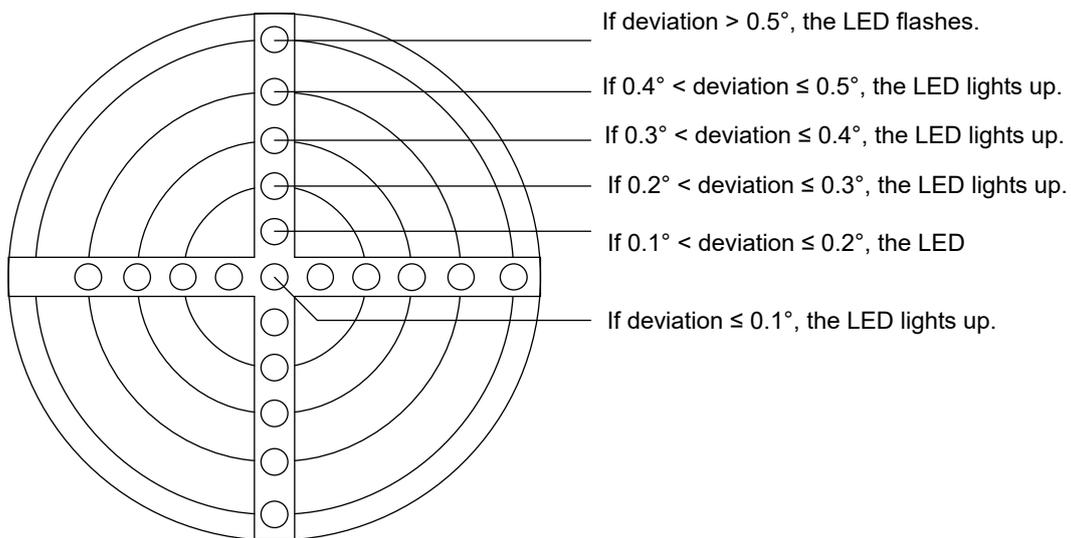


Figure 3-58 Inclinometer

- h) Secure and lock the sliding beams with retaining pins when the outriggers are extended to a desired position. Refer to 3-59.

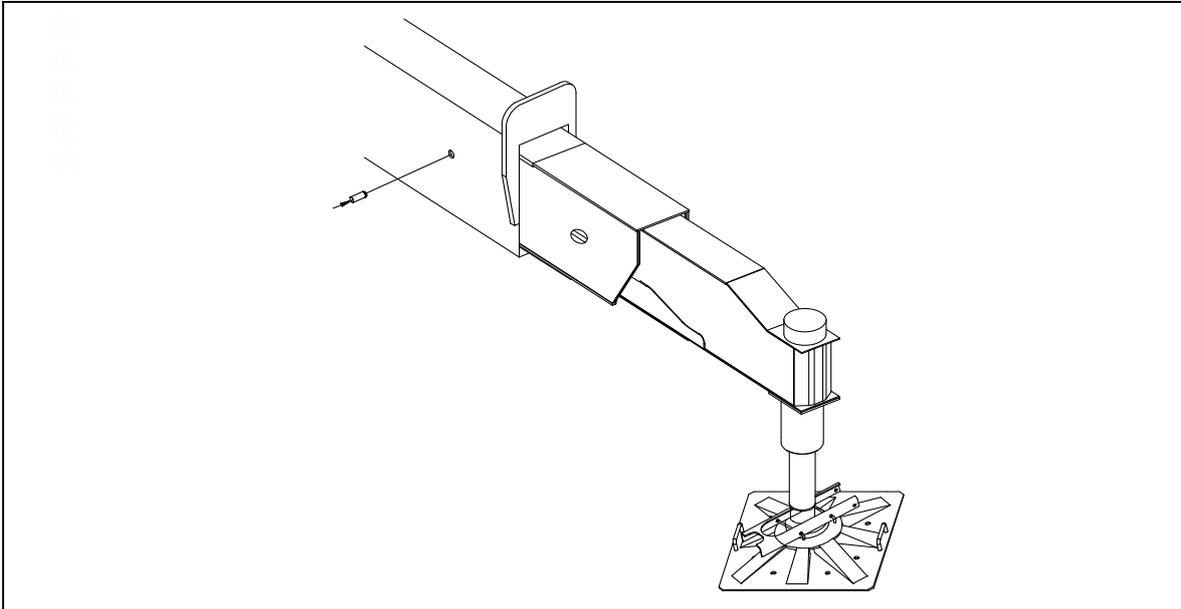


Figure 3-59 Secure and lock the sliding beams

Retract the outriggers according to the reverse sequences.



- (1) Press the engine stop button to shut down the chassis engine.
- (2) Press down the button "Changeover engine RPM / idle speed" to changeover engine RPM / idle speed to increase engine RPM. Press again to return to idle speed. The outrigger speed can be changed via operating this button. Press button "Background lighting" to light up the background lighting. Press again to turn off the lighting.
- (3) The extension and retraction movements for the same outrigger are interlocked. The movements of horizontal cylinder and vertical cylinder are interlocked. For the allowable outrigger simultaneous movements, refer to Table 3-7.
For example: When you extend the left front horizontal cylinder, you can only extend the left rear horizontal cylinder or retract the left rear horizontal cylinder at the same time.
When one outrigger is operated, the keys 14, 19, 22 and 27 cannot be operated.
When the keys 14, 19, 22 and 27 are operated, one outrigger cannot be operated.
- (4) You can operate the left support control unit and the right support control unit at the same time.

Note:

- Only two buttons (including non-action buttons, e.g. “Changeover engine RPM / idle speed”, “Engine on” and “Engine off”) are operational at the one time.
- When you press two buttons with the same function on both support control units simultaneously, only one button is operational.
- When you press another two buttons, the first two buttons are operational. The first two buttons should also obey the above requirements.

(5) The outrigger box has a proximity switch. The sliding beam has a sensor for detecting the full extension and intermediate extension signals which can be observed from the monitor. The superstructure controller can decide whether the OM (full extension or intermediate extension) is valid according to the detection signal and vehicle deviation value. If the set value does not conform to the actual one, alarm sounds to remind you to extend or retract the outrigger to the required length.

(6) Calibrating vehicle deviation sensor to 0°.

The vehicle deviation sensor must be calibrated to 0° if you have reinstalled or replaced the sensor or if you have replaced the left support control unit.

How to calibrate:

- Extend the sliding beams and vertical cylinders.
- Level the crane (Be sure the crane is level!).
- Press and hold buttons “Emergency stop”, “Extend the 5th outrigger” and “Retract the 5th outrigger” simultaneously for more than 10 seconds.
- Release these buttons until the central LED on the inclinometer lights up.

(7) Before calibration, you should level the vehicle.

How to level:

- Make sure that you do the work on level ground that is hard.
- Fully extend the 4 horizontal cylinders and vertical cylinders.
- Make sure that the outrigger pads are in the center position below the outrigger.
- Install all the counterweight plates.
- Derrick up the boom to about 80°.
- Clean the contamination off the chassis frame horizontal plane. Put the level gauge or inclinometer on the left front, left rear, right front & right rear positions and at 1:30, 4:30, 7:30 & 10:30 clock positions of the crane. Look at the level gauge or inclinometer to tell if the crane is level.
- If the level gauge or inclinometer shows a level indication (the bubble does not change its position in the level gauge or the Inclination angle on the inclinometer is less than 0.1°), the crane is level.
- If the level gauge or inclinometer does not show a level indication (the bubble changes its position in the level gauge the Inclination angle on the inclinometer is more than 0.1°), you can move each vertical cylinder to make the crane level.

For the allowable outrigger simultaneous movements, refer to Table 3-5.

Table 3-5 Outrigger simultaneous movements

Current movement	Simultaneous movements
Extend left front horizontal cylinder	Extend left rear horizontal cylinder Retract left rear horizontal cylinder
Retract left front horizontal cylinder	Extend left rear horizontal cylinder Retract left rear horizontal cylinder
Extend left rear horizontal cylinder	Extend left front horizontal cylinder Retract left front horizontal cylinder
Retract left rear horizontal cylinder	Extend left front horizontal cylinder Retract left front horizontal cylinder
Extend right front horizontal cylinder	Extend right rear horizontal cylinder Retract right rear horizontal cylinder
Retract right front horizontal cylinder	Extend right rear horizontal cylinder Retract right rear horizontal cylinder
Extend right rear horizontal cylinder	Extend right front horizontal cylinder Retract right front horizontal cylinder
Retract right rear horizontal cylinder	Extend right front horizontal cylinder Retract right front horizontal cylinder
Extend left front vertical cylinder	Extend right front vertical cylinder Extend left rear vertical cylinder
Retract left front vertical cylinder	Retract right front vertical cylinder Retract left rear vertical cylinder
Extend left rear vertical cylinder	Extend right rear vertical cylinder Extend left front vertical cylinder
Retract left rear vertical cylinder	Retract right rear vertical cylinder Retract left front vertical cylinder
Extend right front vertical cylinder	Extend left front vertical cylinder Extend right rear vertical cylinder
Retract right front vertical cylinder	Retract left front vertical cylinder Retract right rear vertical cylinder
Extend right rear vertical cylinder	Extend left rear vertical cylinder Extend right front vertical cylinder
Retract right rear vertical cylinder	Retract left rear vertical cylinder Retract right front vertical cylinder

 **CAUTION****Points for attention:**

- (1) Remove the retaining pins from outriggers before extending and retracting the outriggers. Install all retaining pins after the outriggers are fully retracted and before driving.
- (2) The speed for extending or retracting the outriggers can be adjusted by the engine control.
- (3) The clearance between sliding beam and outrigger box can be regulated by the adjusting bolts.
- (4) Set down the telescopic boom on the boom support before you retract the outriggers.
- (5) Close the covers for the support control units after operation or before cleaning the crane, so as to prevent the water from entering.
- (6) If any of the emergency stop buttons is pressed, other buttons will be invalid.

 **DANGER**

Only operate the crane with outriggers intermediately or fully extended. Install the retaining pins after the outriggers are in position.

 **CAUTION**

Completely expose the mark (full or intermediate) on the sliding beam sections 2 after you fully or intermediately extend the outrigger.

3.5 Driving operation

3.5.1 Move the crane to the job site

- a) Do not skip a gear when you move through the gear cycle.
- b) Stop the vehicle if there are unusual conditions with the items in the below list:
 - Steering
 - Braking
 - Sounds or smells
 - Vibrations
 - Sudden speed increase or decrease.

If you cannot find or correct the problem, send the vehicle for repair.

- c) Do not operate a vehicle if a warning light illuminates. Stop the vehicle and have it repaired.
- d) Examine the following instruments for functions:
 - Barometer
 - Engine oil pressure gauge
 - Water thermometer, etc.
- e) Put the crane in a lower gear before you move up a slope to decrease the load on the engine and drive-line.
- f) Do the items that follow before you go down a long hill slope:
 - Make sure that the brake system can stop the crane before you go down the slope.
 - Put the transmission in the low gear range before you go down the slope. Activate the engine brake.
 - Prevent the engine from overrunning. Overrunning of the engine refers to the phenomenon that the engine driven by the wheel runs at the RPM which exceeds its rated maximum engine RPM. The maximum engine speed of this chassis is limited to 2150 r/min.



- (1) Engine overrunning will cause damage to the engine.
- (2) Slow the crane down before you change to a lower gear.
- (3) If the engine stops because the fuel tank is empty, air can go into the fuel system. When this occurs, remove the air from the fuel lines.



Do not let the vehicle move forward when the engine is off.

3.5.2 Crane movement in off-road conditions

When the axles are in the mud (no traction) or on rough terrain, follow these steps:

- a) Add transversal and longitudinal differential locks to axles. The transfer case is added the longitudinal differential lock.
- b) Put the transmission in the low gear. Otherwise, the crane service life will be shortened.
- c) Make sure that the engine RPM is around maximum.
- d) Put rigid materials, e.g. pieces of wood or iron plates, below the wheels.

3.5.3 Park the vehicle

- a) When you park the vehicle, follow the instructions below:
 - 1) In bad weather condition (rain, snow, ice) or on a slope, make sure that there is a lot of clearance in front and to the aft of the vehicle.
 - 2) Apply the parking brake. Always put the chocks before and behind the wheels on a slope.
 - 3) Put the transmission in the neutral position.
- b) Before you stop the engine, do the items that follow:
 - 1) Depress the engine control pedal 2 or 3 times to increase the engine RPM. This makes the oil flow into each part of the engine.
 - 2) Let the engine idle while you monitor the coolant temperature.
 - 3) Stop the engine, when the coolant temperature is in the correct range.



Make sure that the hazard lights illuminate when the vehicle is parked on the road at night.

3.5.4 Emergency stop on the roadway

If the crane malfunctions on the roadway, do the items that follow:

- a) Stop the crane in a safe place.
- b) Set the hazard lights to ON and put the warning triangle in position.
- c) Apply the parking brake if you stop because of a drive train (propeller shaft, axle) fault or you make an emergency stop on a slope. Put the chocks before and behind the wheels
- d) Examine the vehicle to find the part that caused the malfunction. Be careful of the road conditions while you move around the vehicle.
- e) If you cannot repair the vehicle, contact the manufacturer or tell the servicing and repair facility.

ZOOMLION

Truck Crane Operator'S Manual

Chapter 4 Operation-Crane Superstructure



Chapter 4 Operation – Crane Superstructure

4.1 Operator's cab

4.1.1 Overview

For the overall view of the cab interior, refer to Figure 4-1. For the operating elements in the cab, refer to Table 4-1.

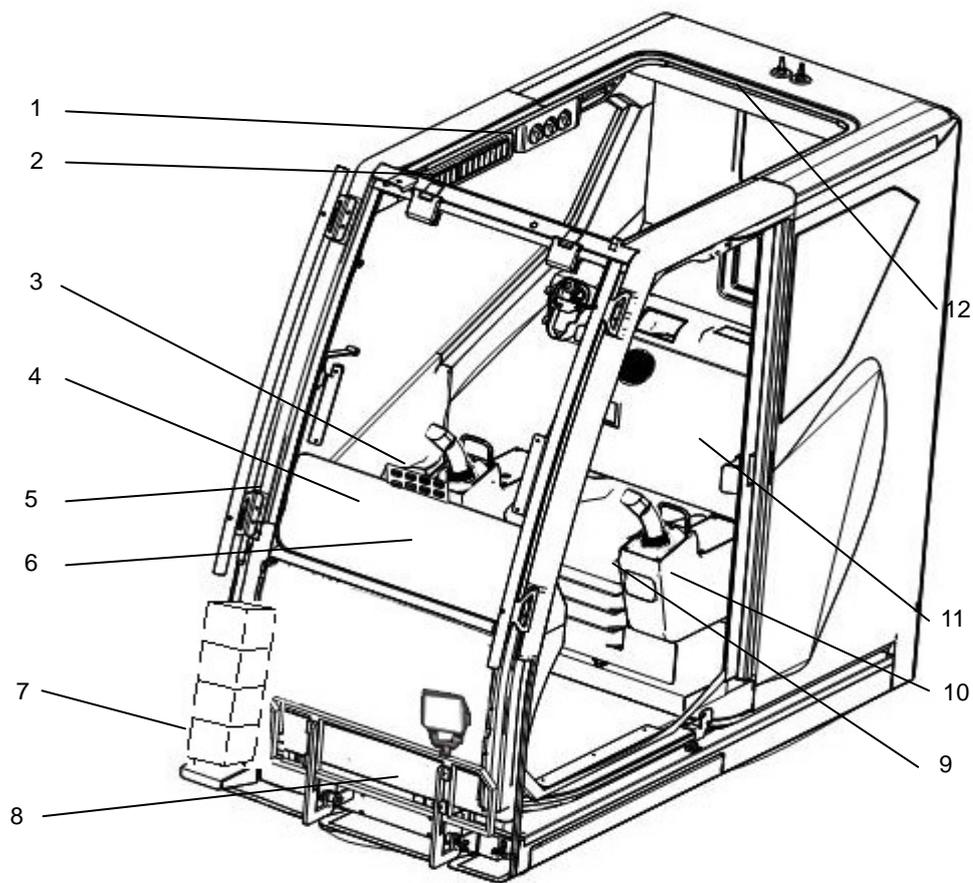


Figure 4-1 Cab interior

Table 4-1 Operating elements in the cab

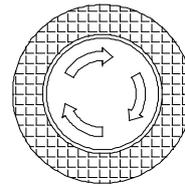
Pos.	Description	Pos.	Description
1	Control panel, A/C and cab heater	7	Trichromatic lamp
2	Rocker switch and indicator light	8	Working lamp
3	Right joystick	9	Left joystick
4	Switch panel	10	Left control box
5	Front windshield wiper	11	Air conditioning outlet
6	Instrument panel	12	Roof windshield wiper

4.1.2 Instrument panel

1 Switch Emergency stop

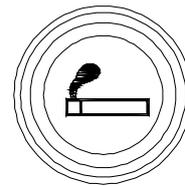
Pressed:

All superstructure movements are cut off in order to prevent property loss and personal injury.

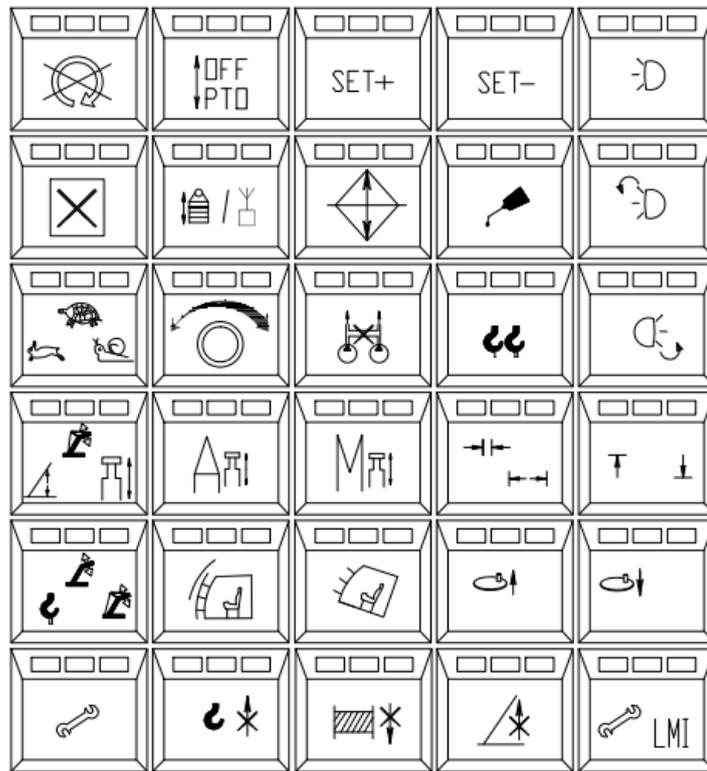


2 Cigarette lighter

Push-in the cigarette lighter for several seconds. Pull it out to use it.



4.1.3 Switch panel



1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

Figure 4-2 Switch panel, operator's cab

Table 4-2 Switch panel

Pos.	Description	Pos.	Description
1	Button Engine stop	5	Rotary headlamp deadman button
2	Button PTO	6	Deadman button
3	Button Set engine RPM +	7	Button Pre-selection of counterweight remote control box / remote controller
4	Button Set engine RPM -	8	Button Oil cooler fan

9	Button Central lubricating system	20	Button Boom pin operation
10	Button Turn left, rotary headlamp	21	Button Pre-selection of auxiliary winch / jib derricking / luffing jib derricking
11	Button Pre-selection of high / medium / low speed	22	Button Operator's cab tilting downwards
12	Button Inching mode	23	Button Operator's cab tilting upwards
13	Button Shunt	24	Button Removing slewing lock pin
14	Button Synchronization of the main and auxiliary winch	25	Button Inserting slewing lock pin
15	Button Turn right, rotary headlamp	26	Bypass key switch
16	Button Pre-selection of boom derricking / telescoping	27	Bypass key switch Winch in the spool-up mode
17	Button Automatic telescoping	28	Bypass key switch 3wraps of wire-rope on main winch
18	Button Manual telescoping	29	Bypass key switch Radius approaching upper limit
19	Button Cylinder pin operation	30	Bypass key switch Overload

1 Button Engine stop

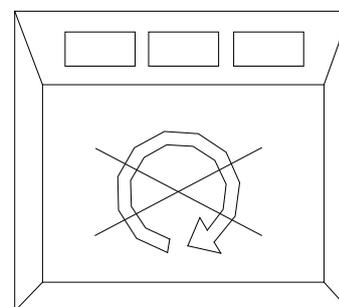
Pressed:

The middle light turns red.

When the superstructure works, press this button to shut down the engine.



Disengage the PTO first before stopping the engine.



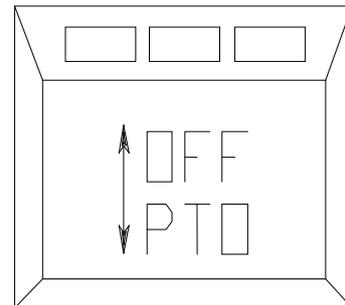
2 Button PTO**Pressed:**

The middle control light illuminates. PTO is engaged.

Pressed once again:

When this button is pressed once again, the PTO mode exits and the engine speed returns to the idle speed.

When it is pressed again, the control light (red) illuminates again.



Engage the PTO before you begin a lift operation.

Do not begin a lift operation until the PTO is engaged.

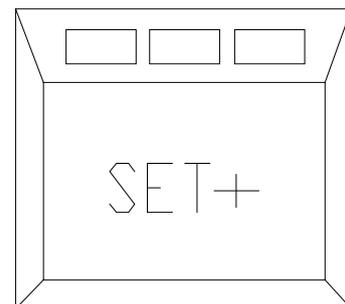
3 Button**Set engine RPM +**

After the engine enters into PTO mode:

Pressed:

The middle control light turns red.

The superstructure engine RPM is increased by 150 r/min.

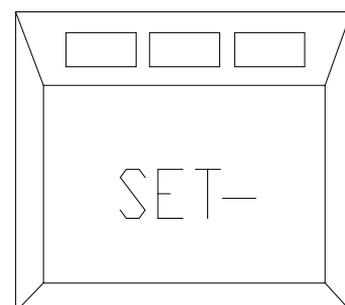
**4 Button****Set engine RPM -**

After the engine enters into PTO mode:

Pressed:

The middle control light turns red.

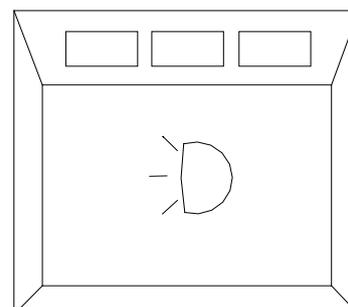
The superstructure engine RPM is decreased by 150 r/min.

**5 Rotary headlamp deadman button****Pressed:**

The middle control light illuminates in red. And the headlamp illuminates.

Pressed again:

The middle control light extinguishes. And the headlamp extinguishes.



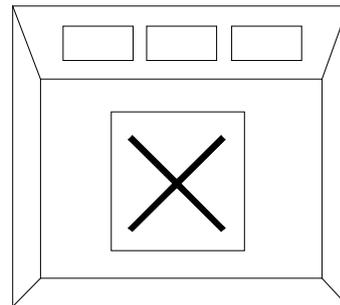
6 Deadman button

Pressed:

The middle control light turns red.
 Functions of the joysticks can be operated.
 It has the same function as the deadman buttons on the left and right joysticks.



**Deactivate the button after operation.
 Otherwise, risk of inestimable losses!**



7 Button

Pre-selection of counterweight remote control box / remote controller

When these three lights extinguish, the counterweight remote control box / remote controller stop working and the joystick in operator's cab can work normally.

Pressed once:

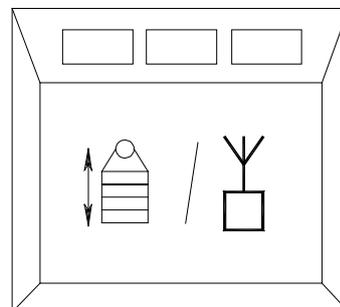
The right control light illuminates.
 The controller is permitted to work and the joystick in operator's cab stops working.

Pressed twice:

The left control light illuminates.
 The controller is permitted to work and can conduct the counterweight operation.

Pressed three times:

These three lights extinguish.
 Activate this switch in this cycle.



8 Button

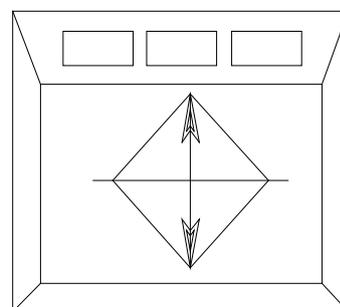
Oil cooler fan

Pressed:

The oil cooler fan begins to work. The oil cooler fan works if one of the following conditions is met:

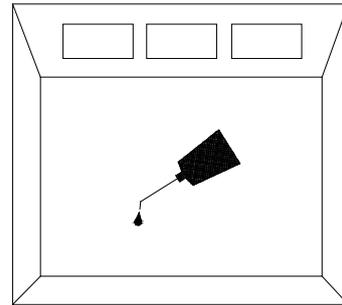
- When the engine runs and the button "oil cooler fan" is activated.

When the engine runs and the hydraulic oil temperature exceeds 50°C. When the hydraulic oil temperature is below 46°C, the oil cooler fan automatically stops.

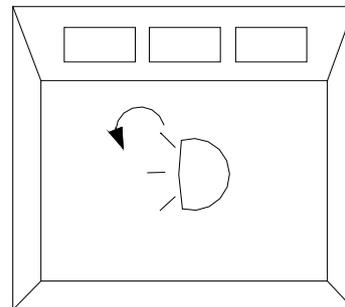


9 Button**Central lubricating system****Pressed once:**

The central lubricating system starts forcedly.
And the lubricating device is forcedly electrified. The central lubricating system starts to work for a work cycle.

**10 Button (Not used)****Turn left, rotary headlamp****Pressed:**

The middle control light illuminates.
The rotary headlamp turns left.

**11 Button****Pre-selection of high / medium / low speed**

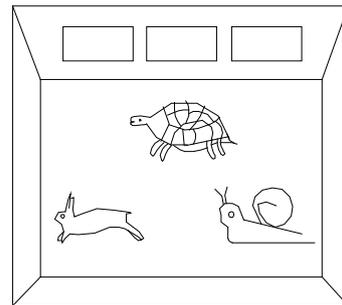
Crane movements "Slew" and "Hoist" have 3 speeds which depend on the position of switch.

Crane movements "Telescope" have 2 stages at low speed:

- (Extremely slow): intermediately deflect the right joystick to the right / left
- (Slow): fully deflect the right joystick to the right / left.

Crane movements "Derrick" also have 3 speeds.

Considering the controllability, crane movements "Derrick" speed will automatically limit to the safety range when the boom length is equal to or more than moderate one.

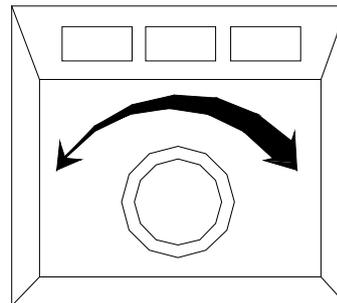


12 Button

Inching mode

Pressed:

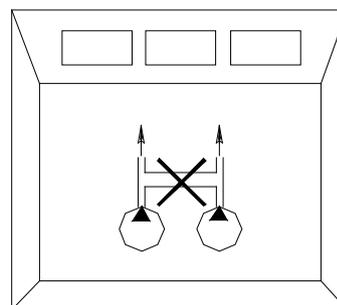
The middle light illuminates.
Crane movements "Slew", "Derrick" and "Hoist" can realize stepless speed regulation by the speed switch on left control box. And thus each crane movement has good inching function.



13 Button Shunt

Pressed:

The middle light illuminates.
The main pump partially flows.
When it requires to align the mounting hole or to achieve high inching performance, the crane movements will become slow and smooth by activating this switch. Before simultaneous crane movements "hoist" and "derrick", you can activate this button to obtain better operation performance.

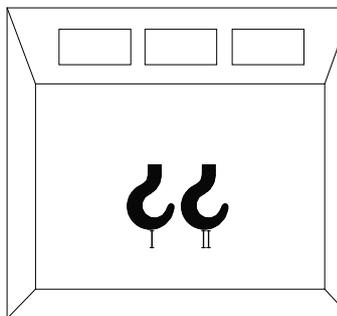


14 Button

Synchronization of the main and auxiliary winch

Pressed:

The middle control light illuminates.
Synchronous lifting and lowering of the main and auxiliary winch can be operated under the TBM operating mode.

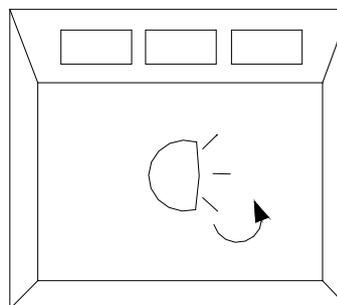


15 Button (Not used)

Turn right, rotary headlamp

Pressed:

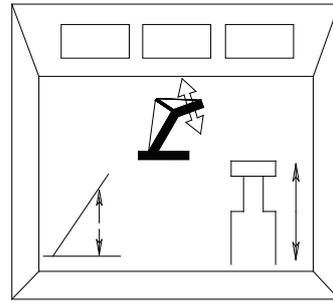
The middle control light illuminates.
The rotary headlamp turns right.



16 Button**Pre-selection of derrick / telescope****Pressed:**

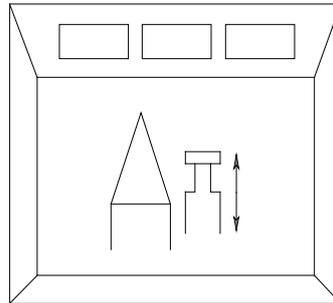
Left light illuminates: The boom derricking movement is operational.

Right light illuminates: The boom telescoping movement is operational.

**17 Button Automatic telescoping****Pressed:**

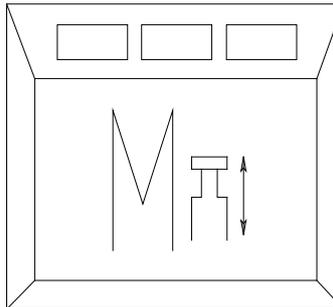
The middle light illuminates.

The boom can perform automatic telescoping.

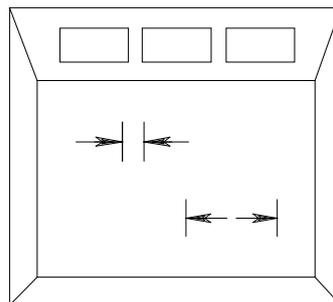
**18 Button Manual telescoping****Pressed:**

The middle light illuminates.

The boom can perform manual telescoping.

**19 Button****Cylinder pin operation**

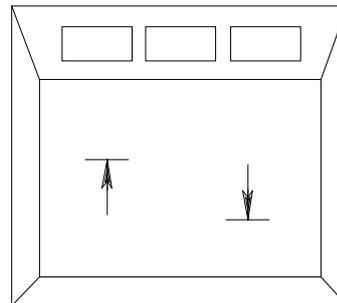
Manual telescoping mode: activate the switch till the left light illuminates to conduct boom pin retracting operation; activate the switch till the right light illuminates to conduct boom pin extending operation;



20 Button

Boom pin operation

Manual telescoping mode: activate the switch till the right light illuminates to conduct boom pin retracting operation; activate the switch till the left light illuminates to conduct boom pin extending operation;



21 Button

Pre-selection of auxiliary winch / jib derricking / luffing jib derricking (Not Used)

Pressed (to illuminate the left control light):

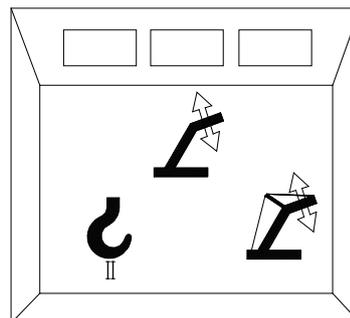
Turn the right joystick leftwards/ rightwards to spool up /reel off of the auxiliary winch.

Pressed (to illuminate the middle control light):

Turn the right joystick leftwards/ rightwards to raise / lower the jib.

Pressed (to illuminate the right control light):

Turn the right joystick leftwards/ rightwards to raise / lower the luffing jib.



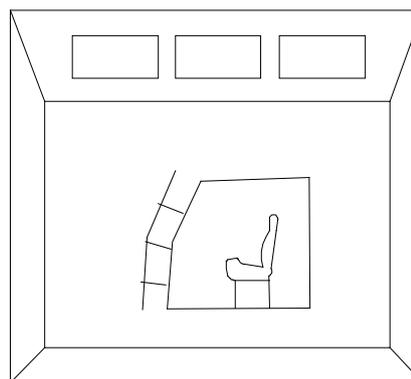
22 Button

Operator's cab tilting downwards

Pressed:

The middle light illuminates.

Tilt the cab downwards.



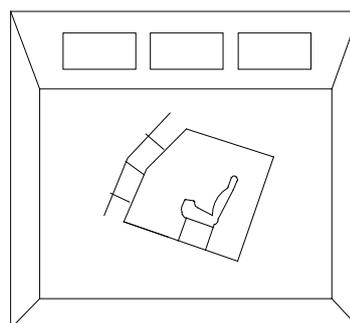
23 Button

Operator's cab tilting upwards

Pressed:

The middle light illuminates.

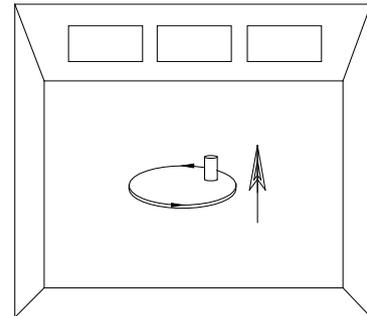
The cab is tilted upwards.



24 Button (Not used)**Removing slewing lock pin****Pressed:**

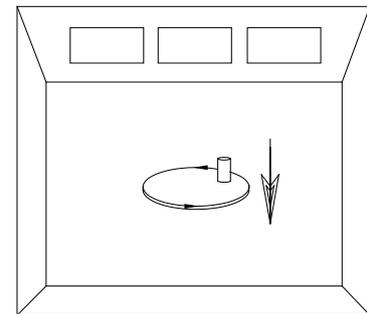
The middle light illuminates.

Slewing lock pin is removed.

**25 Button (Not used)****Inserting slewing lock pin****Pressed:**

The middle light illuminates.

Slewing lock pin is inserted.

**26 Bypass key switch**

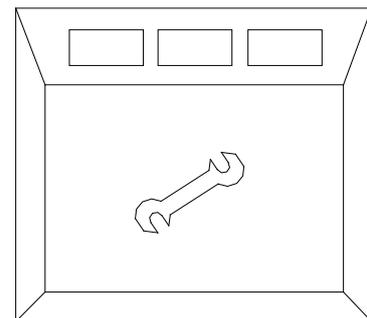
When the radius or the angle exceeds the permissible working range, the buzzer in the electric control box sounds continuously and the movement "Derrick down" will be switched off. When the current boom combination is illegal one, the buzzer in the electric control box sounds continuously and the derricking movement will be switched off. At this time, if you still need to perform the derricking movement a little, activate the bypass key switch in the panel to cancel the limitation function. And the operation towards the dangerous direction can be carried out.



Increased accident risk when bypassing the dangerous movements!

Carry bypassing movements with maximum care and minimum speed.

Do not telescope the boom with a suspended load!



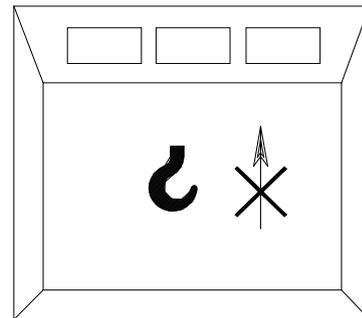
27 Bypass key switch

Winch in the spool-up mode

When the main or auxiliary winch is in the spool-up mode, the buzzer sends out continuous acoustic warning. When the warning occurs, the function of the items below stop:

- Spool up winches.
- Telescope out.
- Derrick down.

At this time, if still need to raise the hook or derrick the boom down slightly, this switch-off can be bypassed by activating this bypass key switch on the instrument panel.



Increased accident risk when bypassing the dangerous movements!

Carry bypassing movements with maximum care and minimum speed.

Otherwise, you should be responsible for the consequence arising therefrom.

Do not telescope the boom with a suspended load! Otherwise, you should be responsible for the consequence.

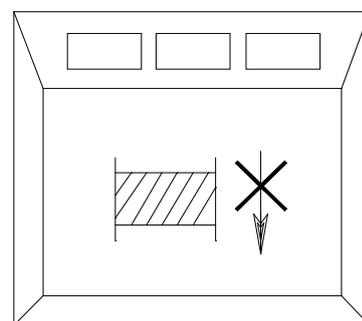
28 Bypass key switch

3wraps of wire-rope on main winch

When the sensor senses that the main winch has 3 wraps of wire-rope on it, the buzzer sends out continuous acoustic warning. When the warning occurs, the function of the items below stop:

- Reel off winches.

At this time, if still need to lower the hook slightly, this switch-off can be bypassed by activating this bypass key switch on the instrument panel.





Increased accident risk when bypassing the dangerous movements!

Carry bypassing movements with maximum care and minimum speed.

Otherwise, you should be responsible for the consequence arising therefrom.

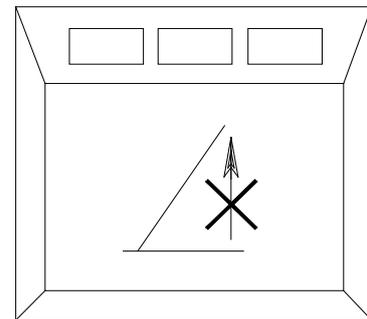
29 Bypass key switch (Not used)

Radius approaching upper limit

When the radius reaches upper limit, the buzzer sends out continuous acoustic warning. When the warning occurs, the function of the items below stop:

- Derrick up.

At this time, if still need to raise the boom slightly, this switch-off can be bypassed by activating this bypass key switch on the instrument panel.



Increased accident risk when bypassing the dangerous movements!

Carry bypassing movements with maximum care and minimum speed.

Otherwise, you should be responsible for the consequence arising therefrom.

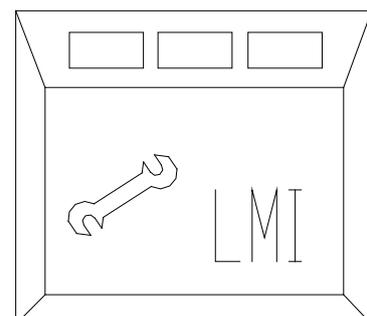
Do not telescope the boom with a suspended load! Otherwise, you should be responsible for the consequence.

30 Bypass key switch

Overload

When the sensor senses that the load weight is more than the load weight in the system, the buzzer sends out continuous acoustic warning. When the warning occurs, the function of the items below stop:

- Spool up winches.



- Derrick down.

At this time, if still need to raise the hook or lower the boom slightly, this switch-off can be bypassed by activating this bypass key switch on the instrument panel.



Increased accident risk when bypassing the dangerous movements!

Carry bypassing movements with maximum care and minimum speed.

Otherwise, you should be responsible for the consequence arising therefrom.

Do not telescope the boom with a suspended load! Otherwise, you should be responsible for the consequence.

4.1.4 Rocker switch and indicator light

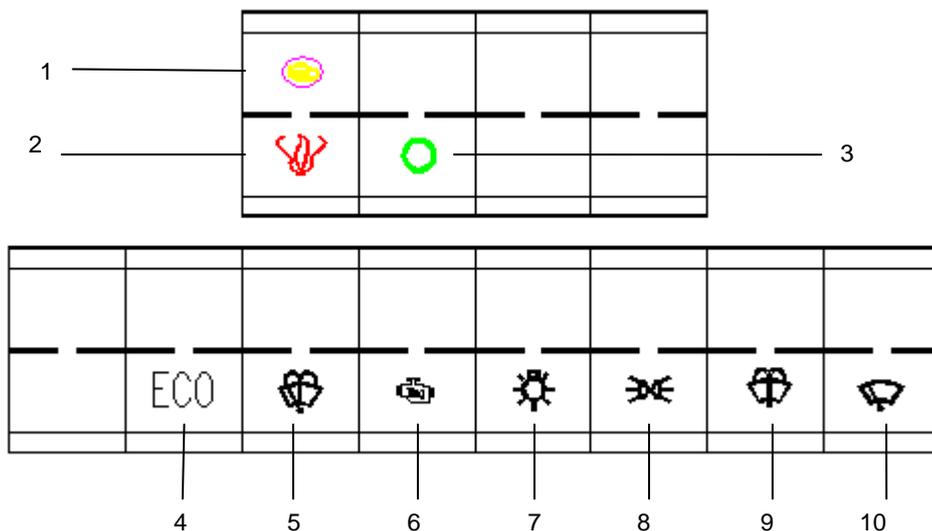
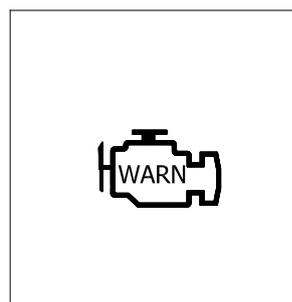


Figure 4-3 Rocker switch and indicator light

Table 4-3 Rocker switch and indicator light

Pos.	Description	Pos.	Description
1	Warning light Engine error code displayed	6	Button Engine fault diagnosis
2	Warning light Cab heater fault	7	Button Work lights
3	Control light Power source	8	Button Corner marker lights
4	Button ECO mode	9	Button Front windshield washer system
5	Button Roof window wiper and washer	10	Button Front windshield wiper

- 1 Warning light**
Engine error code displayed
Illuminates:
 You can read the engine error code.



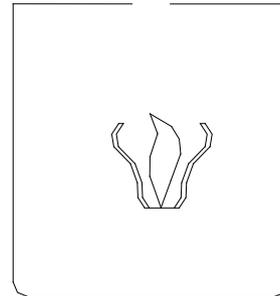
2 Warning light

Cab heater fault

Illuminates:

Cab heater fails.

It is suggested that stop the cab heater and rectify it.

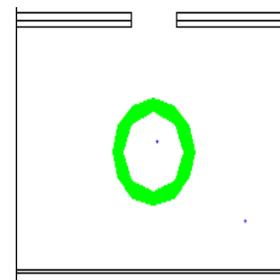


3 Control light (Not used)

Power source

Illuminates:

The superstructure battery is not electrified.



4 Button

ECO mode

Position I:

ECO semi-automatic mode is ON.

Position II:

ECO full-automatic mode is ON.



5 Button

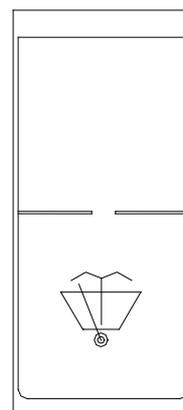
Roof window wiper and washer system

Position 1:

Roof window wiper works.

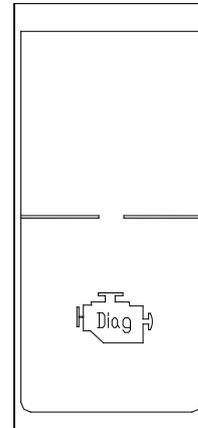
Position 2:

Roof window washer system works.

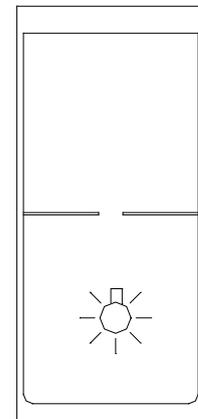


6 Button**Engine fault diagnosis****Pressed:**

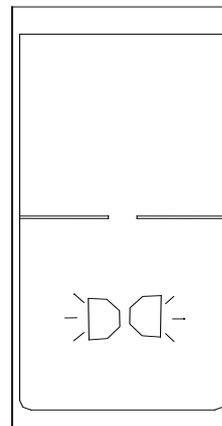
You can read the flash code of engine fault.

**7 Button****Work lights****2 stages:**

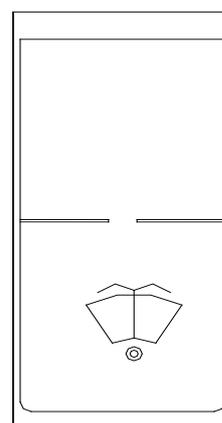
1. Background lighting
2. Background lighting, work lights on cab front and boom sections

**8 Button****Corner marker lights****Pressed:**

Turn on the corner marker lights and work lights on boom head.

**9 Button****Front windshield washer system****Pressed:**

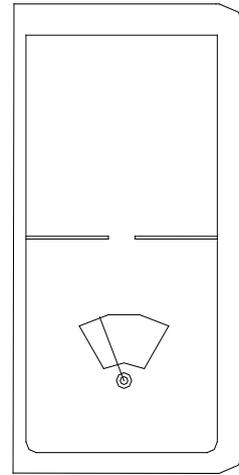
Turn on the windshield washer system on the front window.



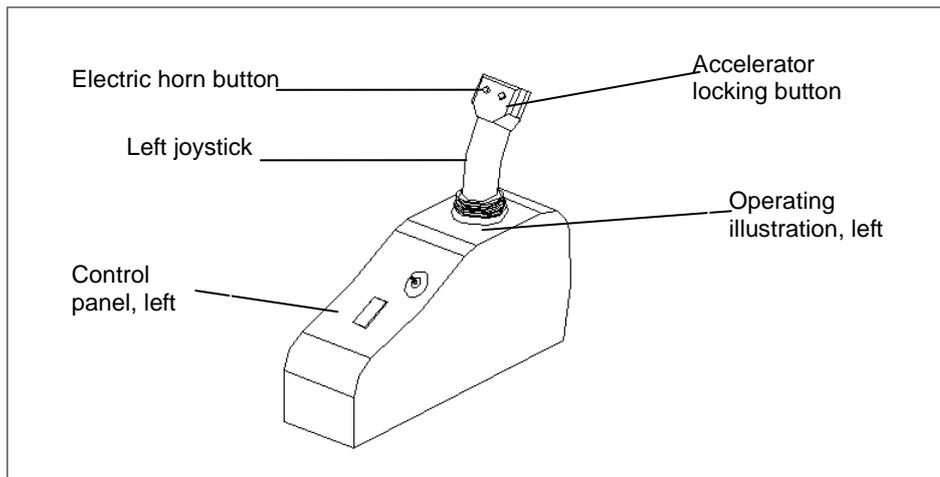
10 Button**Front windshield wiper****2 stages:**

Intermittent

Wipe

**4.1.5 Control boxes****4.1.5.1 Left control box**

For the left control box, refer to Figure 4-4.

**Figure 4-4 Left control box**

For the left joystick and its operating illustration, refer to Figure 4-5.

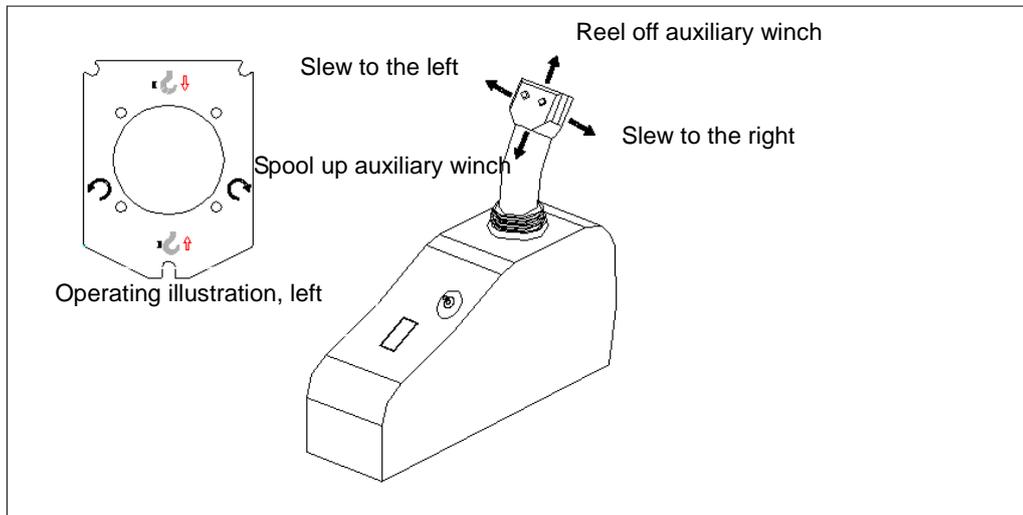


Figure 4-5 Left joystick and its operating illustration

For the left control panel, refer to Figure 4-6.

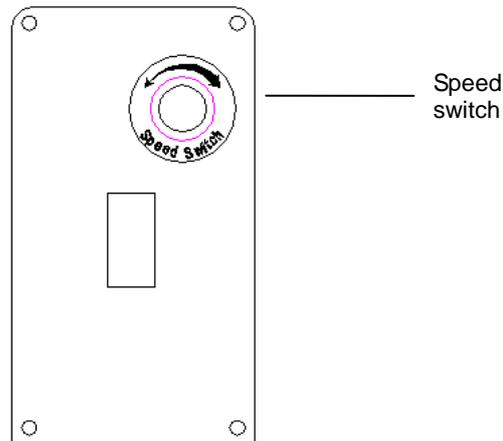
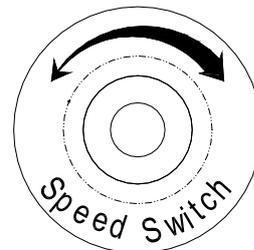


Figure 4-6 Left control panel

1 Speed switch

Pressed:

After the inching mode button is pressed, turn this switch clockwise to realize stepless speed adjustment of crane slewing, derricking up/down and spooling up / reeling off.



4.1.5.2 Right control box

For the right control box, refer to Figure 4-7.

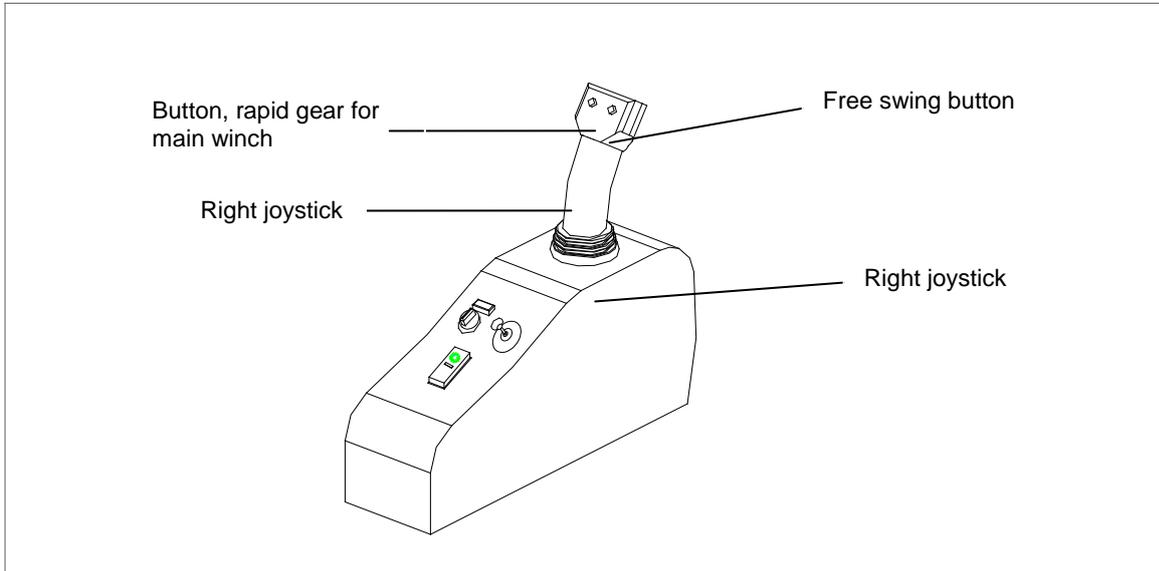


Figure 4-7 Right control box

For the right joystick and its operating illustration, refer to Figure 4-8-a.

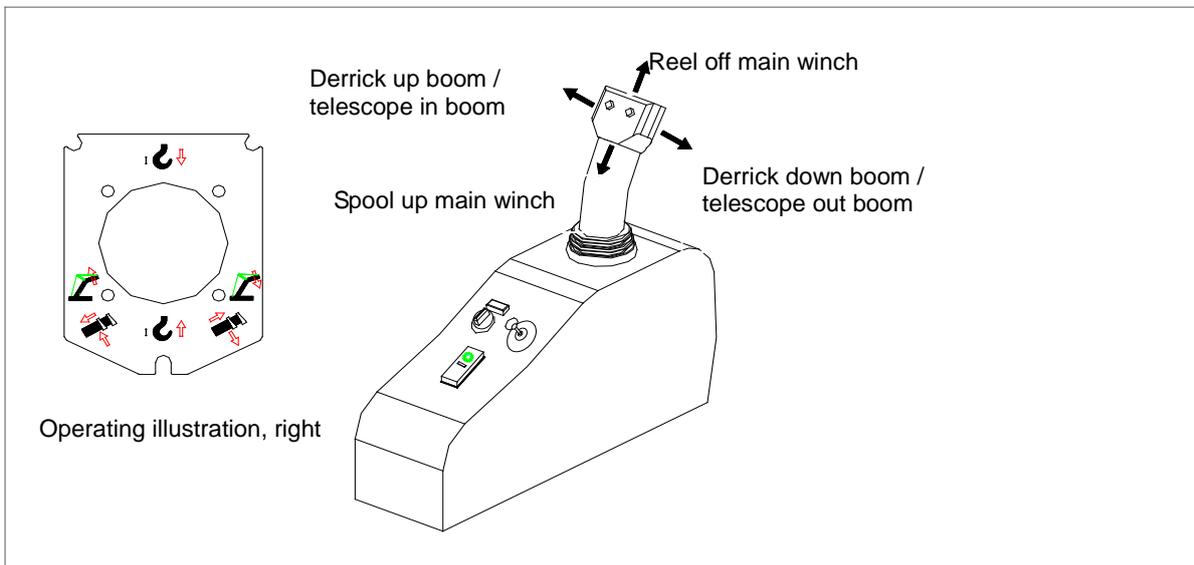


Figure 4-8-a Right joystick and its operating illustration

For the right control panel, refer to Figure 4-8-b.

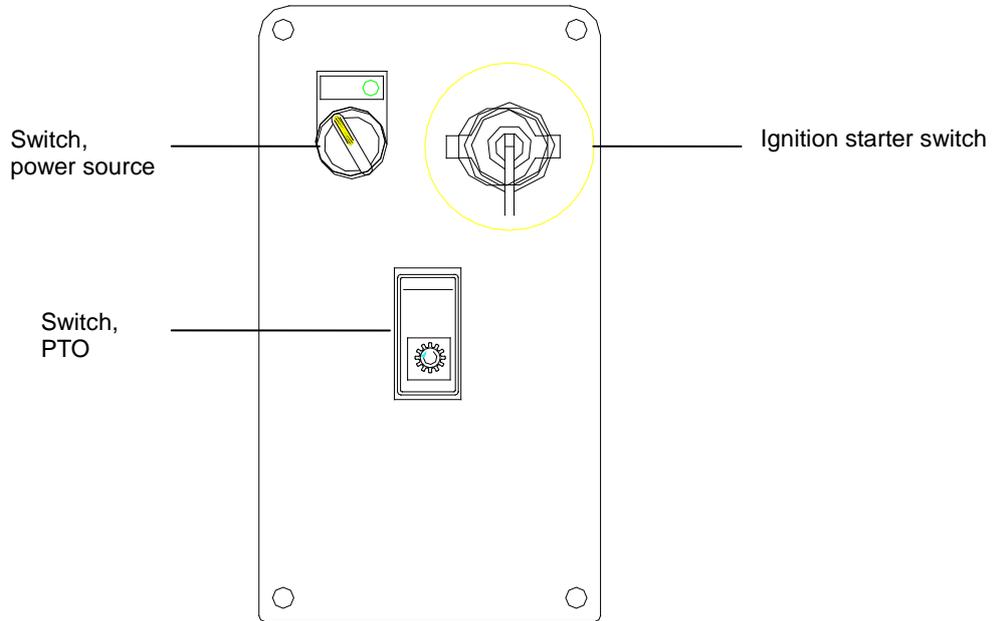


Figure 4-8-b Right control panel

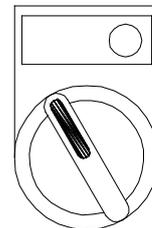
1. Switch

Power source

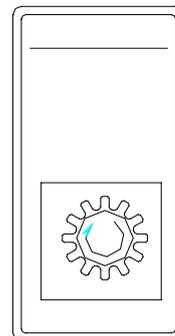
Right position:

The battery master switch of the superstructure is activated. And the whole superstructure is electrified.

Meanwhile, the control light attached with this switch illuminates.



2. Switch PTO(Not Used)



3. Ignition starter switch

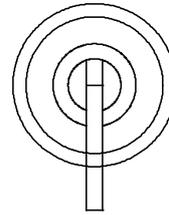
There are two positions in clockwise direction.

Right position 1:

When the key is turned to this position, the superstructure is electrified.

Right position 2:

When the key is turned from right position 1 to right position 2, the engine starts.



After the engine starts, release the key to let it rebound to right position 1. This key has a protection function – repeat start, namely the key should return to zero position firstly after the engine starts. And then, the next start will be valid.

The accelerator locking button is located on the left joystick.

How to engage the accelerator locking button?

- ~ Depress the accelerator pedal to any engine speed.
- ~ Push this button once to lock the accelerator.
- ~ And push this button again to release this function.

The free swing button is located on the right joystick. Push the free swing button to let the slewing table turn without rotational tension.

The left / right deadman button is located on the backside of left / right joystick. Push and hold-in the deadman button to operate the functions of the left / right joysticks. If you do not push and hold-in this button or activate the deadman button on the keyboard, the commands from the left or right joystick cannot operate. Refer to Figure 4-9.

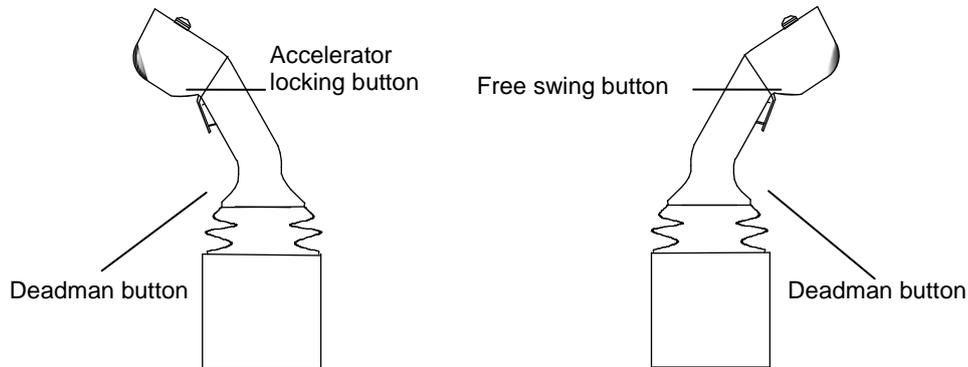


Figure 4-9 Joysticks

! WARNING

Do not activate the free swing button when the crane is operated with a suspended load. Do not push and hold-in the deadman button on the joysticks or activate the deadman button on the keyboard for a long time with tools! Otherwise, risk of inestimable loss.

4.1.6 Engine speed control priority

- a) Priority: automatic telescoping accelerator >remote controlled accelerator> ECO control accelerator >PTO accelerator>accelerator locking> accelerator pedal > idle speed of superstructure
- b) Function instructions
 - 1) Superstructure idle speed 850 rpm: Only when the PTO is engaged and the superstructure doesn't have any movements, can the engine speed be 850 rpm.
 - 2) Accelerator pedal of superstructure: The accelerator pedal can control the engine speed with the range of 750 rpm – 1750 rpm. Only under the PTO mode, these parts and the mode such as the automatic telescoping accelerator, the remote controlled accelerator, the accelerator locking and the ECO mode don't perform their functions, the accelerator pedal will be valid.
 - 3) PTO accelerator: only when these parts such as the remote controlled accelerator, the telescoping accelerator and the ECO control accelerator don't perform their functions, the PTO accelerator will be valid. And the valid range of engine speed is between 1000 rpm – 1750 rpm. The base value is 750 rpm. The engine speed is increased / decreased by 250 rpm by pressing the switch once.
 - 4) Automatic telescoping accelerator: When the automatic telescoping is valid, its priority is the highest, namely all of other operations controlling engine speed are invalid under the automatic telescoping condition. There are three engine speeds in total, namely 850 rpm, 1200 rpm and 1400 rpm.

- 5) Remote controlled accelerator: Its priority is inferior to the automatic telescoping accelerator. When the telescoping accelerator doesn't perform its function and the button "Remote controller" is activated, the remote controlled accelerator will be valid.
- 6) Accelerator locking: The accelerator locking operation only can lock the current control value of engine controlled by the accelerator pedal, and cannot restraint the other lock operations except the pedal.
- 7) ECO control accelerator: When the automatic telescoping accelerator and the remote controlled accelerator don't perform their functions and the button "ECO mode" is activated, ECO controller can automatically control the accelerator. ECO has two modes: semi-automation and full-automation. **Under the semi-automatic mode**, ECO controller only restraint the max. engine speed. At this time, you can depress the accelerator pedal to control the engine speed. **Under the full-automatic mode**, ECO controller will completely control the engine speed according to the current load and the system pressure. And human intervention is not allowed.

4.1.7 Engine control pedal

You can depress the engine control pedal to increase the engine RPM, thus to accelerate the slewing, derricking, telescoping and hoisting movements.

4.1.8 Operator's seat

For the operator's seat, refer to Figure 4-10.

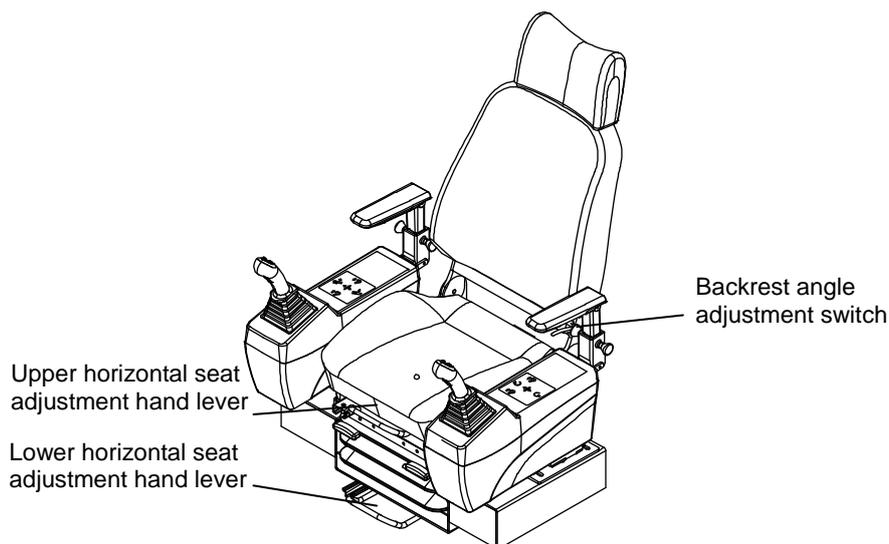


Figure 4-10 Operator's seat

4.2 Computer system

4.2.1 General

The load moment limiter is a computer system for controlling and monitoring mobile cranes. In addition to controlling the boom telescoping via computer programs, it is also of self-diagnosis function.

The load moment limiter calculates data from the pressure sensors, length sensor, angle sensor and other monitoring devices to judge whether the crane is in safe working conditions, and displays the basic parameters, such as boom length, boom angle, working radius, rated lifting capacity etc., on the monitor.

The “Advance warning” icon appears and the buzzer sends out slow acoustic warning if the current load exceeds the (90%) limit programmed in for advance warning. At this time, the operator should pay much attention to the operation.

The “Stop” icon appears, the buzzer sends out fast acoustic warning and all dangerous crane movements are switched off if the current load exceeds the 100% mark.

The crane can only work towards safe directions till the dangerous operation is deactivated.

The load moment limiter can prevent crane from tipping or being destructed, thus ensures safe operation of the crane. However, do not rely entirely on the load moment limiter. If the rated lifting load displayed on the load moment limiter is different from the one shown in lifting capacity table, refer to the lifting capacity table.

For the main screen of the load moment limiter, refer to Figure 4-11. For the elements of main screen, refer to Table 4-4.



Figure 4-11 Crane working status monitoring interface

Table 4-4 Elements of the monitoring interface

Pos.	Description	Pos.	Description
1	Warning icons	5	Instrument and pressure display
2	Load information	6	Speed and working mode
3	OM display	7	OM code and telescoping status
4	Function icons	8	Warning prompt message



The monitor illustrations in this chapter are only examples. The numerical values in the individual icons and tables do not necessarily match exactly to the crane.

4.2.2 Interface instructions

4.2.2.1 Switching on the computer system and performing self-test

After the computer system is switched on, the load moment limiter performs a self-test to examine whether the three PLC controllers and their respective mentor nodes are on line. If no error is found during the system test, the monitor displays the following screen (Refer to Figure 4-13). Shortly after that, the screen as shown in Figure 4-14 appears on the monitor.

For the "Self-test passed" screen, refer to Figure 4-12.



Figure 4-12 Self-test passed

For the "OM selection" screen, refer to Figure 4-13. You must set that the current OM is in accord with the actual OM.

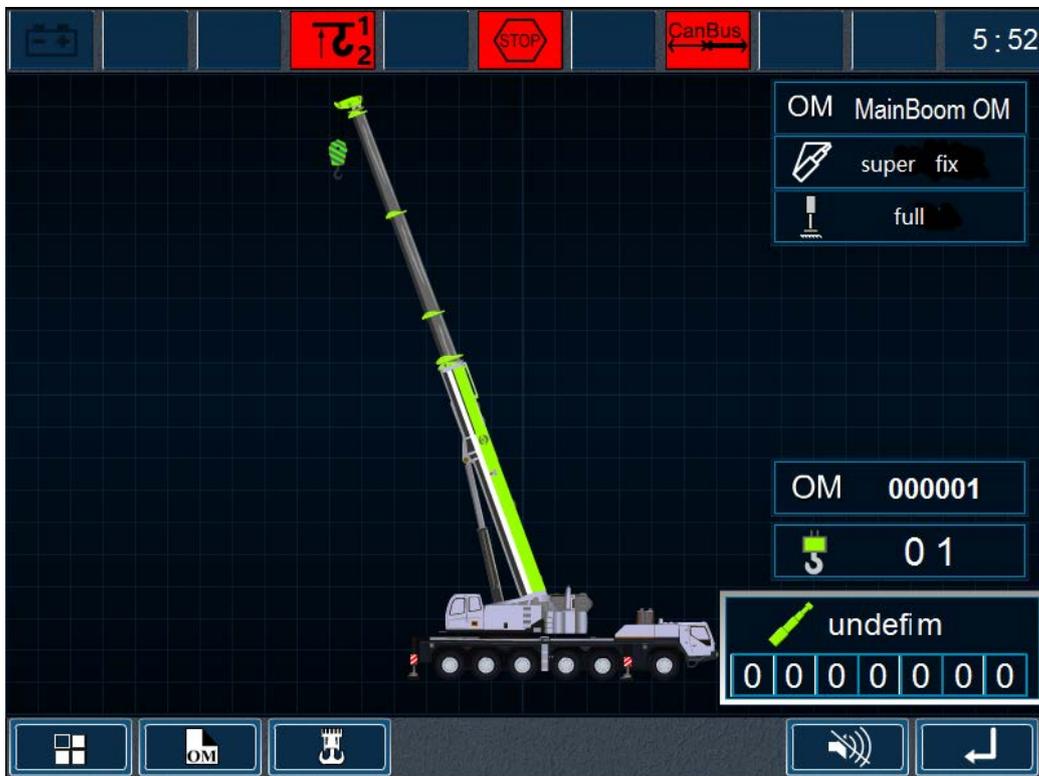


Figure 4-13 OM selection

If a connection error is found during the test, the corresponding controller cannot pass the test and the monitor shows the following screen (Refer to Figure 4-14).

Troubleshooting:

If an error message appears on the monitor:

- a) Turn off the engine and rectify the errors.
- b) Start to perform self-test again.



If an error is found during communication, the buzzer will not stop sending alarm after you turn on the computer. It is a normal phenomenon. Please rectify the communication fault.

For the "Self-test failed" screen, refer to Figure 4-14.



Figure 4-14 Self-test failed

4.2.2.2 Main screen – configuration program

After the OM is selected, it switches automatically to the Main screen – configuration program (Refer to Figure 4-15). Crane parameters can be monitored from this screen in real time.



Figure 4-15 Main screen – configuration program

a) Function key line

The function key line at the bottom of the main screen consists of the function keys F1 to F8 and the function key icons line above them. (Refer to Figure 4-16.)

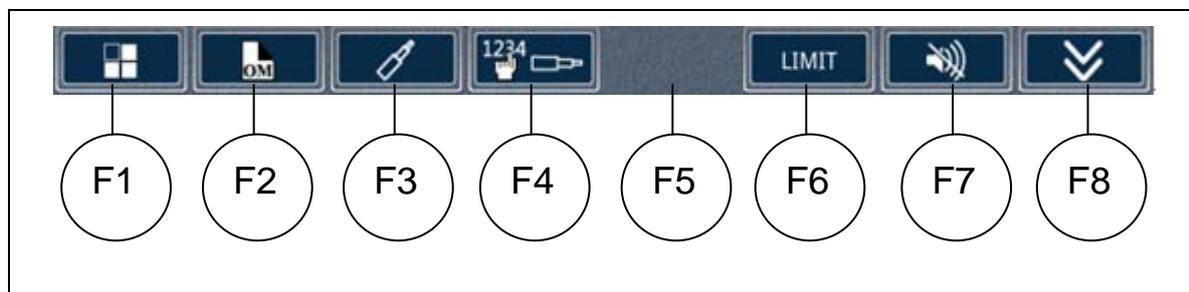


Figure 4-16 Function key line

Press key F1 in the main interface to enter into a navigation interface. Refer to Figure 4-17.

Click the corresponding icons in the main interface to enter into related sub-interfaces. The menu of sub-interface is as follows:

- 1) Parameter setting: after entering a correct password, you can modify the control parameters of PLC. (It is suggested that modify these parameters under experts'

- instructions. Otherwise, the vehicle may break down. And risk of accidents!)
- 2) Communication monitoring: monitor the state of CAN network of complete vehicle.
 - 3) Fault query: Including faults of load moment limiter, engine, controllers, valves of switches and sensors.
 - 4) Calibration interface: including displacement sensor, CR2012, slewing coder, main winch coder, oil quantity sensor, anemometer and calibration of counterweight cylinder length. (This vehicle doesn't have main winch coder and calibration of counterweight cylinder length.)
 - 5) Movement query: including crane movements "slew", "derrick", "hoist" and "telescope", movements of counterweights, variable pump and operator's cab, I/O of boom pin and cylinder pin movements and state monitoring query.
 - 6) GPS interface: including GPS state setting, GPS state monitoring, GPS fault query, GPS emergency unlocking, GPS permanent unlocking, GPS activation, etc.
 - 7) System setting: including date and time, display brightness, Chinese and English display as well as metric and English systems setting function.
 - 8) OM setting: set OMs. (For the details, refer to Section 4.2.2.3.)
 - 9) Maintenance: check the date and interval of maintenance.
 - 10) Query function: including IO port, AD value and calculated values of load moment limiter, outrigger pressure, outrigger counter-force, intermediate / full extended state of outriggers and full extended state of vertical cylinders.

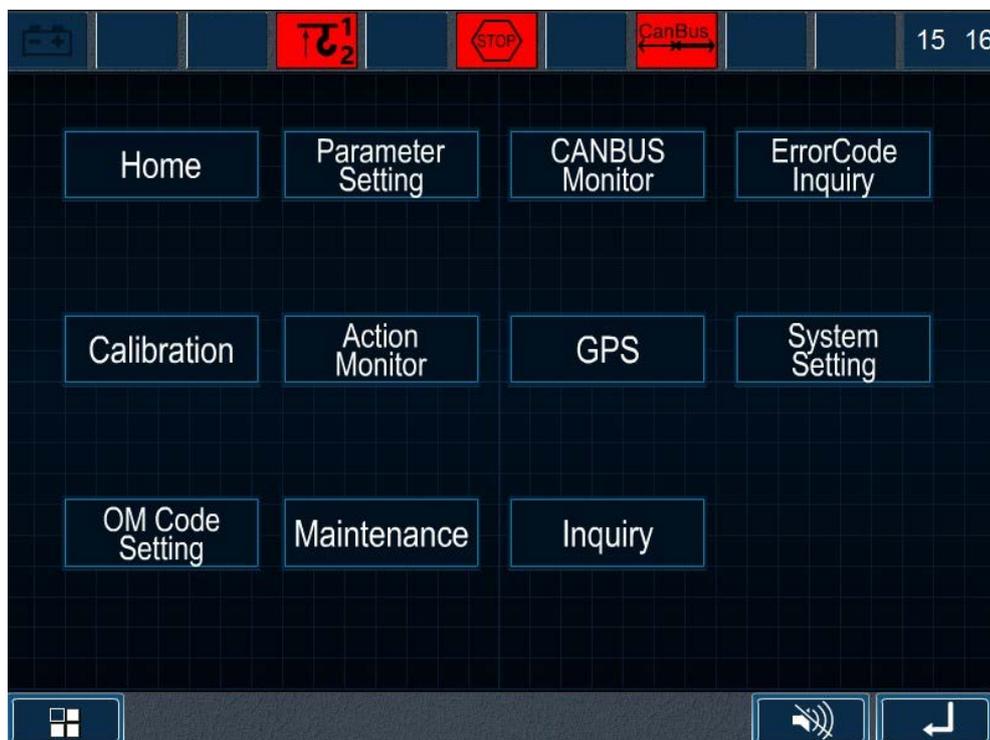


Figure 4-17 Navigation interface

CAUTION

If the hoisting limit switch, lowering limit switch, overload protection, hydraulic level low warning or pipe overpressure protection is activated, press function key F7 to switch off the alarm. But the current error cannot be eliminated. The error can only be rectified manually according to actual working conditions or the hints given by the system.

How to find the error hint:

- (1) Press F5 to switch to relevant figure.
- (2) Press F5 in switched figure.
- (3) In the switched figure, press F4 again.

b) Boom status

Display main boom length, angle, radius, height etc. If the jib is selected, it will also show the configuration of jib. Refer to Figure 4-18.

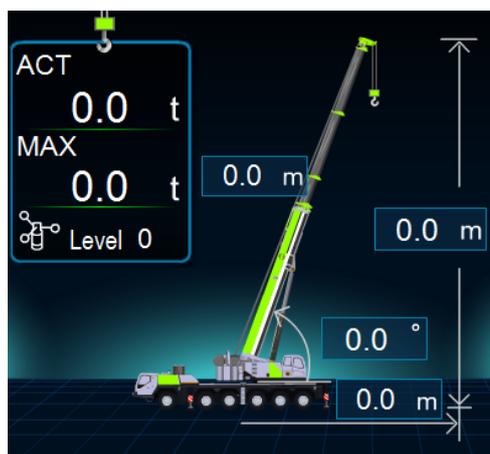


Figure 4-18 Boom status

- c) Display of OM code, reeving, counterweight, power takeoff state, telescoping combinations etc. in real time and outrigger status, etc. Refer to Figure 4-19.

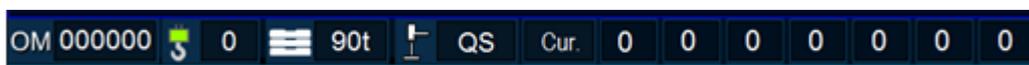


Figure 4-19 OM display

CAUTION

The superstructure can carry out the crane movements after the following prerequisites are met:

The superstructure succeeds in taking the power.

- The corresponding control light  illuminates.
- The engine speed reaches 850 rpm.

d) Displays

For the instrument and pressure display, refer to Figures 4-20-1 and 4-20-2 (You can press function key F8 to switch between these two interfaces.). For the description of displays, refer to Table 4-5.



Figure 4-20-1

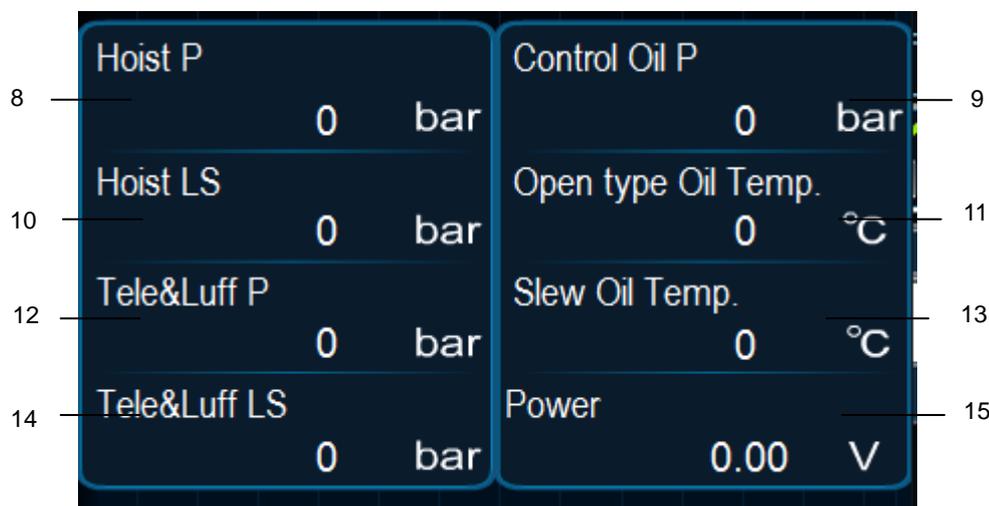


Figure 4-20-2

Figure 4-20 Displays

Table 4-5 Description of the displays

Pos.	Description	Pos.	Description
1	Outrigger back pressure	9	Pressure at control port
2	Length and speed of main hoist rope (optional)	10	Pressure at port P, telescoping and derricking pumps
3	Chassis frame inclination angle	11	Hydraulic oil temperature, open system

4	Engine oil pressure	12	Right slewing oil pressure
5	Coolant temperature	13	Hydraulic oil temperature, slewing system
6	Slewing angle and speed	14	Left slewing oil pressure
7	Fuel reserve	15	Supply voltage
8	Pressure at port P, winch pump		

Note:

For this vehicle, it doesn't have the hydraulic oil temperature of slewing system.

e) Load information (Refer to Figure 4-21)



Figure 4-21 Load information

Display of load capacity bar (in percent, digital and graph), load weight, maximum load and wind speed.

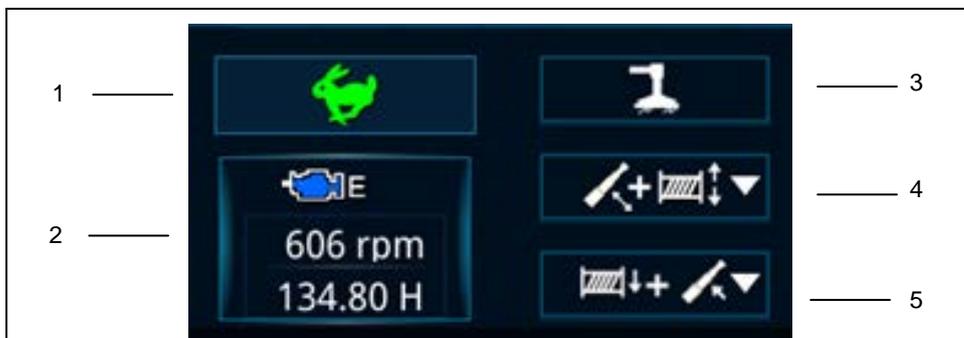


Figure 4-22 Speed and function buttons

Table 4-7 Speed and function buttons

Pos.	Description	Pos.	Description
1	Switch Pre-selection of normal speed / low speed / extremely low speed	4	Switch (Optional) Derrickwinch follow-up function
2	Engine speed and working hours	5	Switch (Optional) Deflection compensation function
3	Vertical cylinders of outriggers improperly extended (Not used) / ECO mode state		

Position 1 in Figure 4-22 is a speed switch. When the button “Pre-selection of high / medium / low speed” is set into one of these three speeds, this switch will display the icon of a rabbit, tortoise or snail.

When the inching mode button on the switch panel is pressed, the current speed value is shown. Activate the speed switch on left control box to regulate stepless speed adjustment of crane movements “derrick”, “hoist” and “slew” between a speed range of 20%-100%.

When the rocker switch “ECO mode” is pressed, ECO mode is activated. The icon ECO will turn yellow (semi-automation) / green (full-automation). Under the semi-automatic mode, ECO controller will restraint the max. engine speed. Under the full-automatic mode, ECO controller will completely control the engine speed instead of the accelerator pedal and the PTO switch.



Figure 4-23 ECO state

As for the boom telescoping combination, refer to Figure 4-24. The combination indicates the current telescoping boom sections.



Figure 4-24 Boom telescoping combination display

As for the top indicators, refer to Figure 4-25. For the details, refer to Table 4-7.

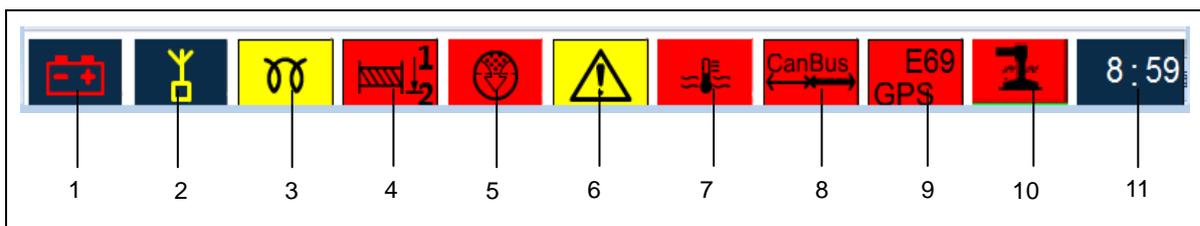


Figure 4-25 Top indicators

Table 4-7 Top indicators

Pos.	Description	Pos.	Description
1	Control light Charging monitoring	7	Warning light Engine coolant temperature high / transmission
2	Control light Counterweight remote control box / remote controller	8	Warning light CAN bus fault
3	Control light Preheating	9	Control light Error code of GPS
4	Warning light Hoisting limit switch / Lowering limit switch/ Warning of wind overspeed	10	Warning light (Not Used) Outrigger overpressure
5	Warning light Oil filter soiled	11	Current time display
6	Control light Error code of load moment limiter		

4.2.2.3 Setting up operating mode

Set an operating mode and boom section telescoping combination before telescoping. Press function key F2 in Figure 4-20 (Main screen – configuration program) to switch to Figure 4-26, or reboot the load moment limiter to automatically enter into Figure 4-26.

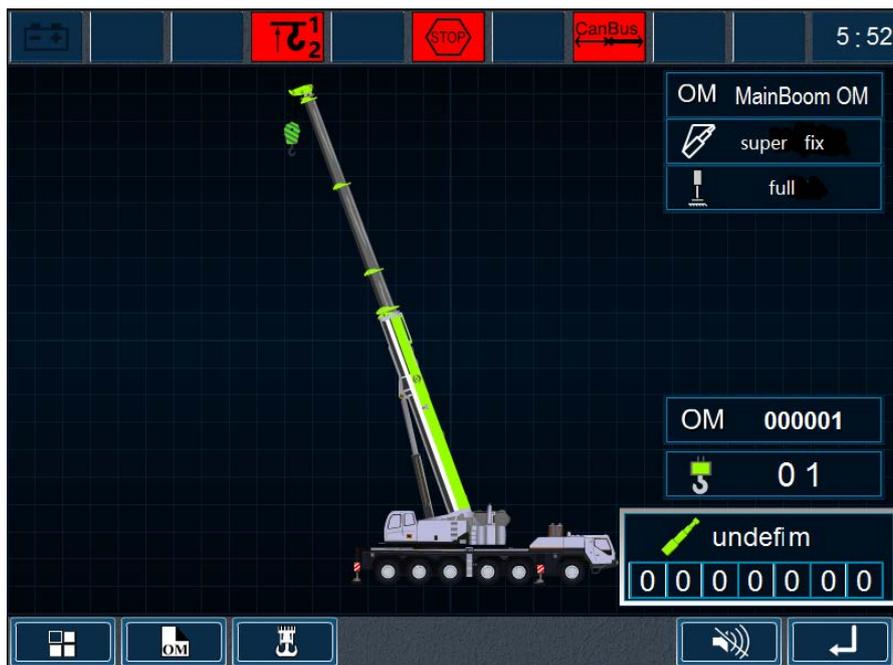


Figure 4-26 Set operating mode

Press key F2 in the OM selection interface to enter into the main OM selection interface. Refer to Figure 4-27.

Press key F2 to select the corresponding icons. When the icon turns yellow, press key F1 to confirm the current item. And then enter into the next OM selection.

Press key F3 to cancel the operation, and then automatically return to the previous interface. After OM setting, press key F6 to confirm. The selected OM will display on the right interface.

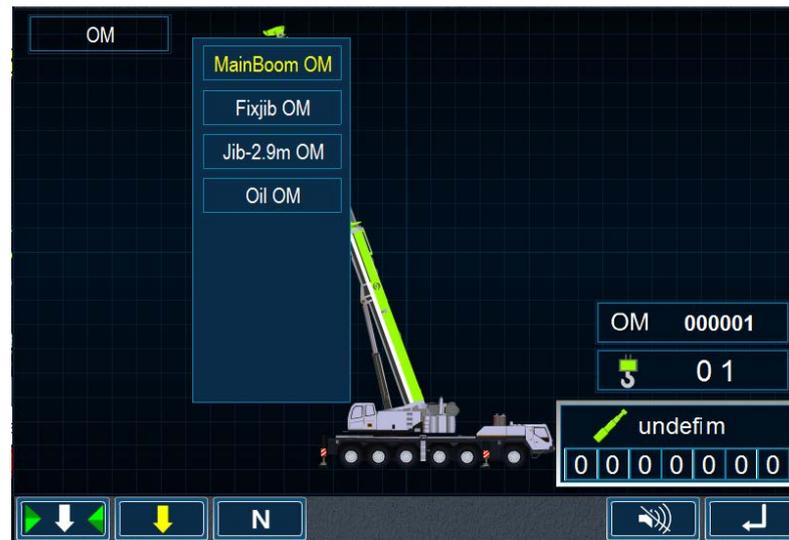


Figure 4-27 Main operating mode setting interface

Press key F3 to select the hook reeving in the OM selection interface. Refer to Figure 4-28.

Press key F1 or F2 to move leftwards or rightwards to select the digits. The background of selected digit will turn blue. Press key F3 or F4 to increase or decrease the value (the range of value is from 0 to 9.). After selection, press key F6 to confirm. And pressing key F5 can cancel the operation. Pressing key F8 can return to the previous interface and exit.

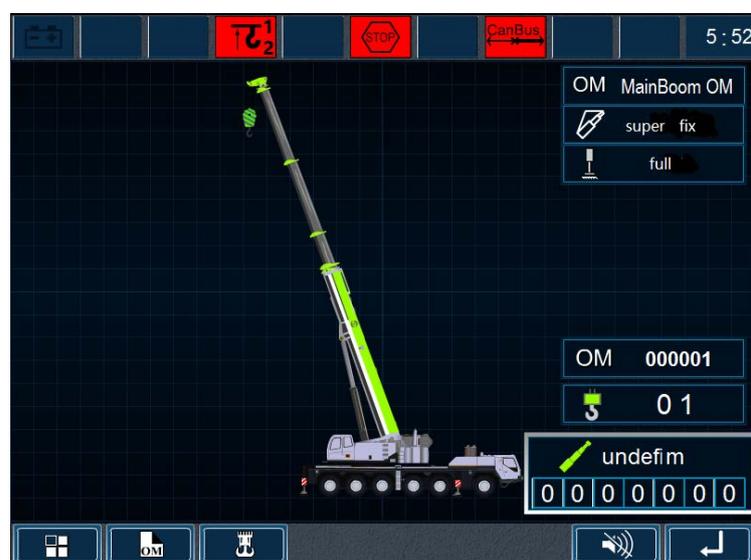


Figure 4-28 Hook reeving selection interface

Press key F4 in the OM interface or the main interface to enter into the telescoping combination selection interface. Refer to Figure 4-29.

Press key F1 or F2 to move upwards or downwards. Press key F3 or F4 to select the telescoping combinations. When the number of telescoping combination displays the current selected combination number, the background of the selected telescoping combination turns baby blue. Press key F7 to confirm the current selection. After the telescoping combination number displays, a green square frame with white check number icon appears. And also can click the telescoping combination number on the screen to bring up the keyboard to input the telescoping combination number. Click “OK” to confirm the current selection. The previous telescoping combinations will automatically skip into the corresponding combination display, and the background of it turns blue. Press key F8 to return and exit.

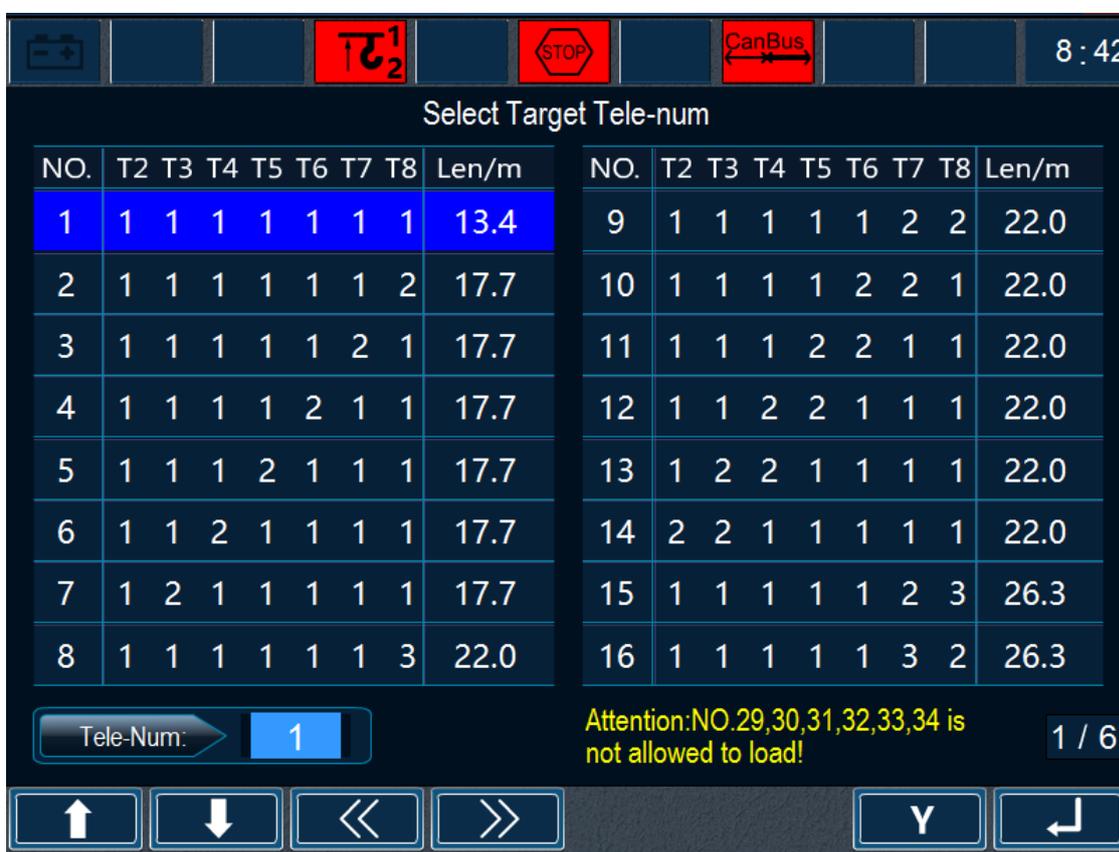


Figure 4-29 Telescoping combination selection interface

CAUTION

- (1) Only when the set OM is valid, can the telescoping operation be carried out.
- (2) The operating mode highlighted in yellow is only for greasing the boom. Do not do lift operation at this time!

4.2.2.4 Telescoping operation

Two telescoping operation modes: manual / automatic

Automatic telescoping is strongly recommended.

The manual telescoping can only be activated when the automatic telescoping is invalid.

For boom combination illustration, refer to Figure 4-30:

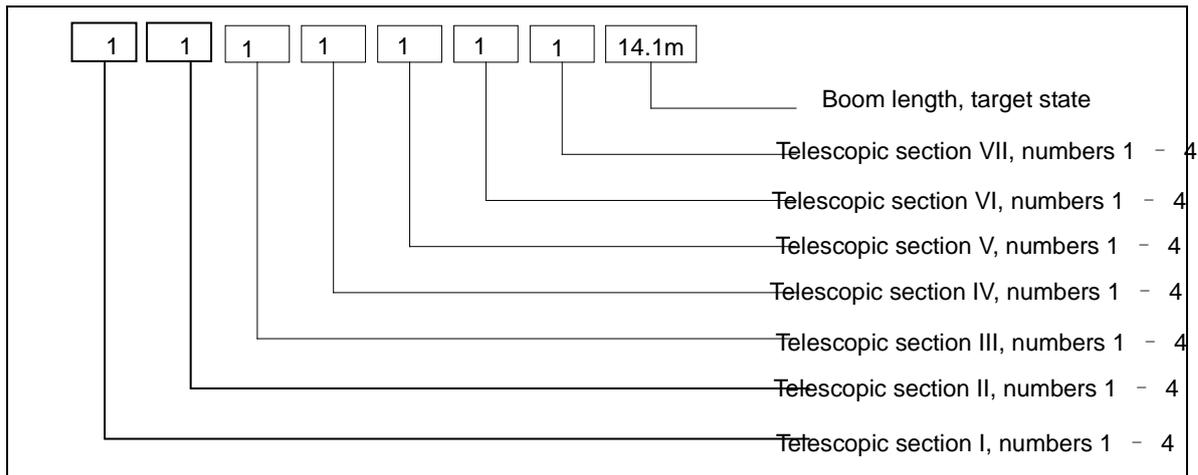


Figure 4-30 Boom combination

Numbers "I – IV": the corresponding telescopic section (highest number = furthest telescopic section)

Numbers "1 – 4": Telescopic section extension status (in percent %)

1: 0%

2: 46%

3: 92%

4: 100%

Automatic telescoping

The automatic telescoping has 3 steps in total.

Prerequisites:

Make sure that the following prerequisites are met:

- The valid operating mode has been set.
- The hoisting limit switch and lowering limit switch are not activated.
- Switch "pre-selection of derrick / telescope" as shown in Figure 4-31 has been set to "Telescope".
- Activate switches "cylinder pin operation" and "boom pin operation" as shown in Figure 4-31 to open the cylinder pin and the boom pin..
- Deactivate switches "automatic telescoping operation" and "manual telescoping operation" as shown in Figure 4-31.
- Activate the switch "pre-selection of normal speed / low speed / extremely low speed" as shown in Figure 4-31 in normal speed.
- Icon  does not appear. (For the details, refer to Figure 4-35).

! CAUTION

- (1) If a telescoping error is detected (the above red icon illuminates), telescope the boom manually until the error is removed.
- (2) All prerequisites mentioned above must be met. Otherwise, the automatic telescoping operation cannot be activated.
- (3) During automatic telescoping, ensure that the boom angle is not less than 80° .



Figure 4-31 Automatic telescoping boom status

- a) Make sure the current boom status is correct.
Press function key F3 in Figure 4-16 to switch to Figure 4-32. Confirm current boom status.

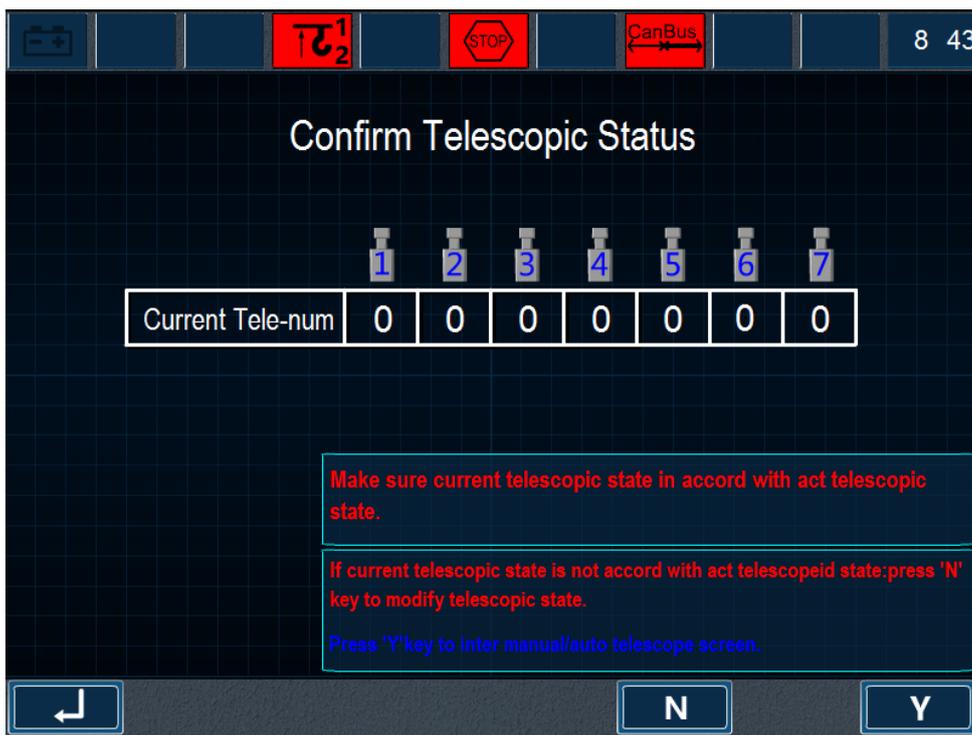


Figure 4-32 Confirm current boom status

If the current boom status matches with the actual one, press function key F8 for confirmation.

If the current boom status does not match with the actual one, press function key F6 for modification. As for how to modify the boom status, please refer to following instructions. Refer to Figure 4-32.



It is very important to confirm the current boom status!

Improper setting will result in incorrect telescoping movement and cause fatal accidents!

After current boom status is confirmed, the system will switch to Figure 4-33.

Top display area displays the following parameters:

- (1) Boom length
- (2) Boom angle
- (3) Working radius
- (4) Wind speed.

Main display area displays:

- (1) Control light icons
- (2) Current boom status
- (3) Target boom status

b) Information about boom pin, cylinder pin and other related information.



Figure 4-33 Telescoping

Control light icons: (the icons on the upper side are corresponding to the control lights on the instrument panel)

Refer to Figure 4-34.

For the description of control light icons, refer to Table 4-8.

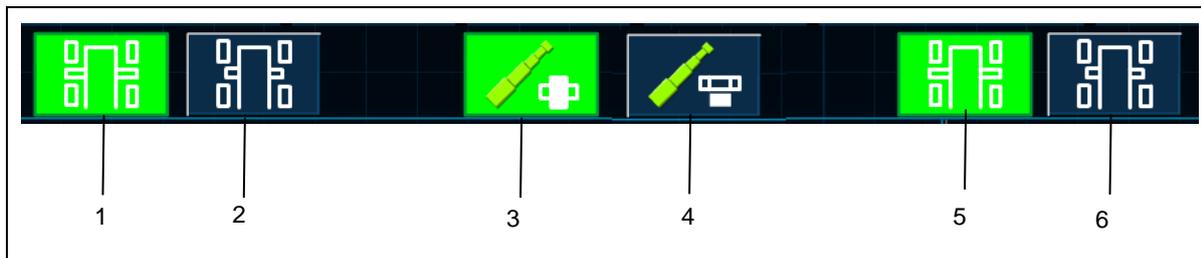


Figure 4-34 Control light icons

Table 4-8 Description of control light icons

Pos.	Description	Pos.	Description
1	Left cylinder pin opened	4	Boom unpinned
2	Left cylinder pin closed	5	Right cylinder pin opened
3	Boom pinned	6	Right cylinder pin closed

c) Telescope the boom sections automatically

1) Make sure that the following prerequisites are met:

- Keys **Manual** and  are highlighted in green.
- Key **Start** is highlighted in green.

2) Pressfunction key F6.

Keys **Manual**,  and **Start** will be highlighted in grey.

3) Activate the switch “automatic telescoping operation” (refer to Figure 4-31). Namely, the middle light on the switch panel turns red. The telescopic boom begins to initiate automatic telescoping movement.

Note:

The keys **Manual** and  will be highlighted in green if the telescopic sections achieve their target status.

Error calling up:

If an error is detected during telescoping, the telescoping movements will stop automatically and this icon  will be highlighted in red.

Press F3 to switch to Figure 4-35.

The content highlighted in red are the detailed error information.

Rectify the errors manually according to the instructions.

Note:

If the icon turns yellow, the telescoping movements will not stop.

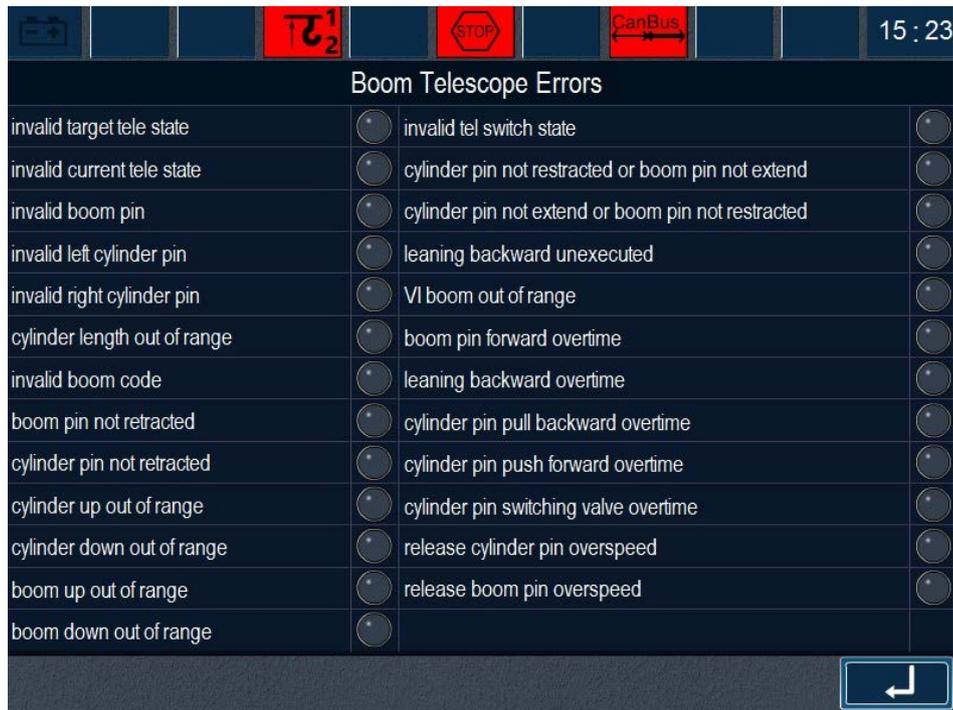


Figure 4-35 Boom telescope errors

Modify the current boom status:

Before switching to Figure 4-33, confirm the current boom status (Refer to Figure 4-32) first.

If the displayed boom status differs from the actual one, press function key F6 "N" to switch to Figure 4-36 for modification.

How to modify the current boom status (Refer to Figure 4-36):

- Press function keys F1, F2 and F3 to select the corresponding telescopic section which needs to be modified.
- Press function keys F5 / F6 to increase / decrease the numerical values.
- Press function key F7 "Y" for confirmation.

After entering correct password, the current boom status modification interface appears. Refer to Figure 4-36.

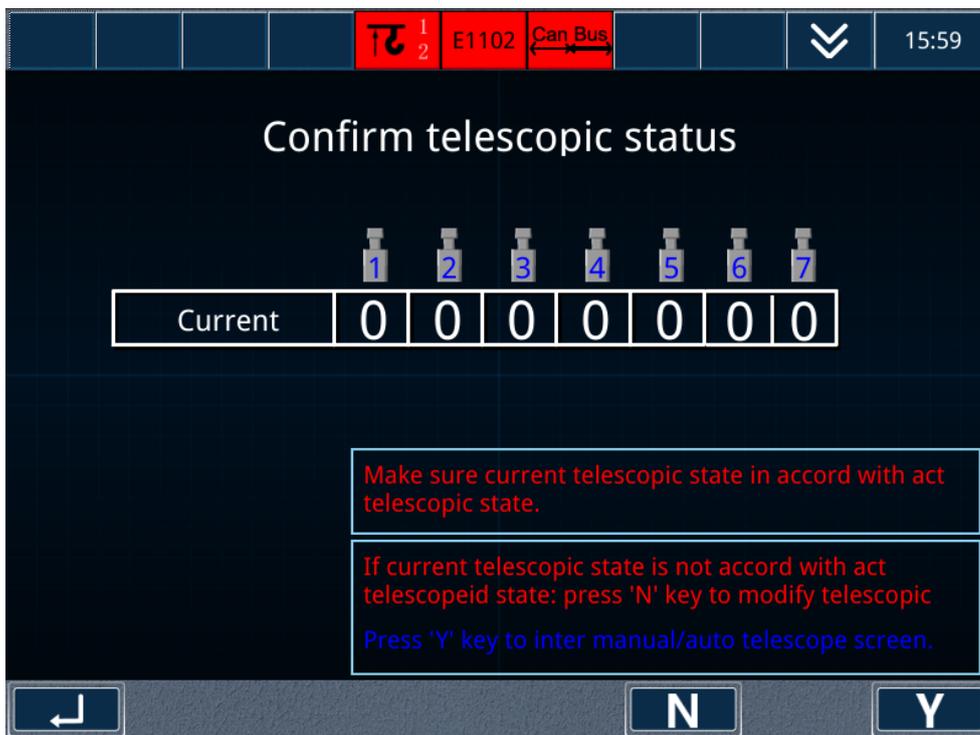


Figure 4-36 Current boom status modification

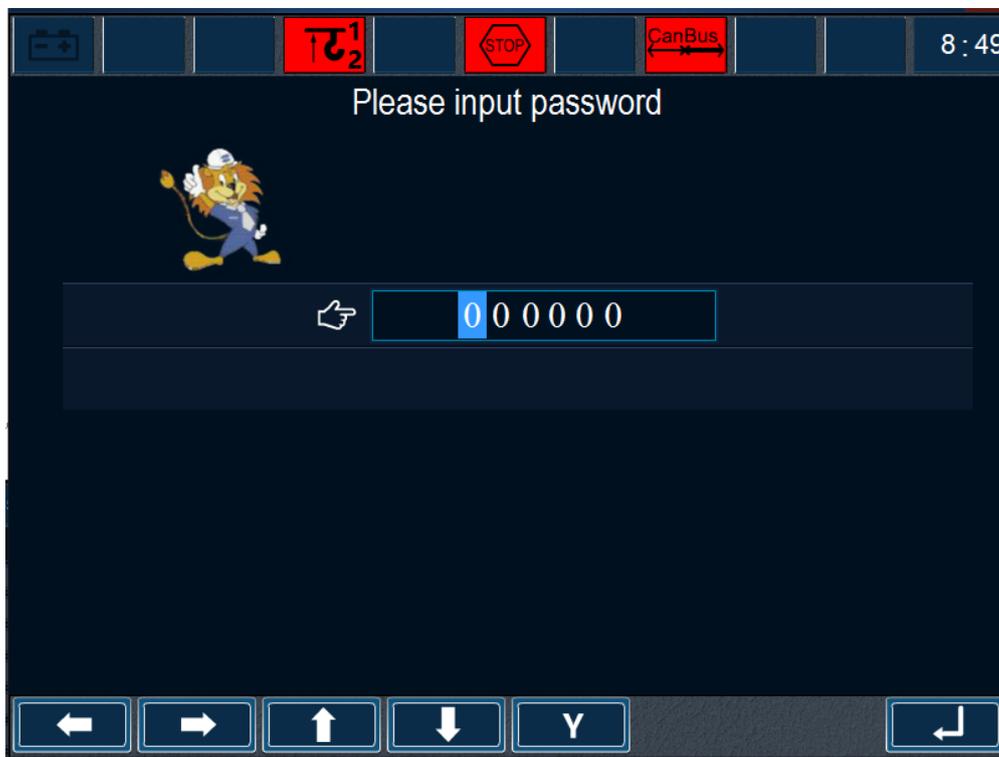


Figure 4-37 Enter password

 **DANGER**

It is very important to confirm the current boom status. If the current boom status is set incorrectly, risk of fatal danger! If you need the password, please contact our technician.

 **CAUTION**

Because the manual telescoping is complex, it is recommended to initiate manual telescoping only when the automatic telescoping is invalid.

Manual telescoping

The manual telescoping has 6 steps in total.

- a) The valid operating mode has been set. For details, please refer to the instructions in "Automatic telescoping".
- b) Switch "pre-selection of derrick / telescope" has been set to "Telescope".
- c) Activate switches "cylinder pin operation" and "boom pin operation" to open the cylinder pin and the boom pin.
- d) Deactivate switches "automatic telescoping operation" and "manual telescoping operation"(Refer to Figure 4-31).

 **CAUTION**

During manual telescoping, individual close or open the pins, the boom angle is permitted to be lower than 80°, but higher than 60°. However, the operator should select a safe angle according to actual boom length to ensure the safety of telescoping.

- e) Press function key F2 in Figure 4-33 to switch to Figure 4-38.
- f) Telescope boom sections manually.
In Figure 4-38, if the above prerequisites are met, "Manual start" will be highlighted in green.
In that case:
 - 1) Press function key F6.
"Manual start" and  will be highlighted in grey.
 - 2) Activate the switch "manual telescoping operation".
 - 3) Move the right joystick.
 - 4) Set the corresponding switch to the required position to telescope boom sections manually.



Figure 4-38 Boom status during manual telescoping

Table 4-9 Manual telescoping interface

Pos.	Description	Pos.	Description
1	Control light icons	7	Telescoping control value
2	Boom code	8	Cylinder length 2
3	Current status	9	Cylinder length 1
4	Target status	10	Real-time cylinder length
5	Target telescopic section	11	Telescope speed
6	Pressure and speed display		



Observe the following instructions when carrying out manual telescoping operation.

a) Unlock the telescoping cylinder

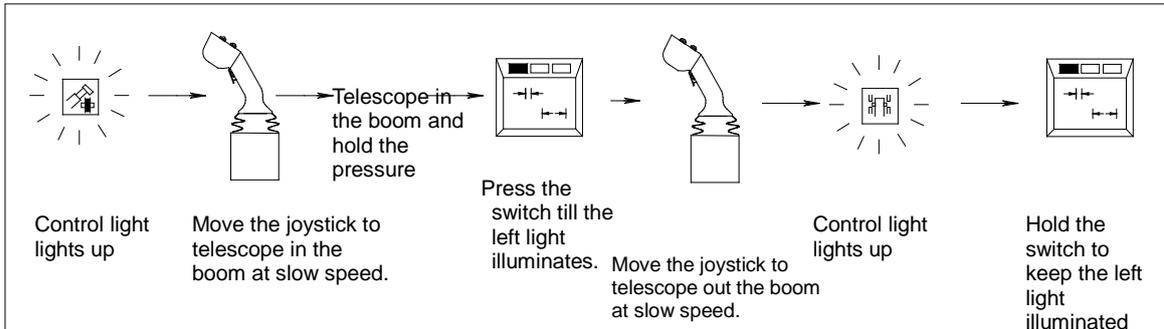


Figure 4-39 Unlock the telescoping cylinder



Do not unlock the cylinder until the icon “Boom pinned” lights up. Otherwise, risk of serious damage!

b) Lock the telescoping cylinder

When you unlock the telescoping cylinder manually, you can extend the cylinder pin in advance. That is to say, when the telescoping cylinder enters into the target telescopic section and the corresponding control light “Target telescopic section” illuminates, you can extend the cylinder pin. Then you extend or retract the telescoping cylinder continuously until the telescoping cylinder is locked with the telescopic section.

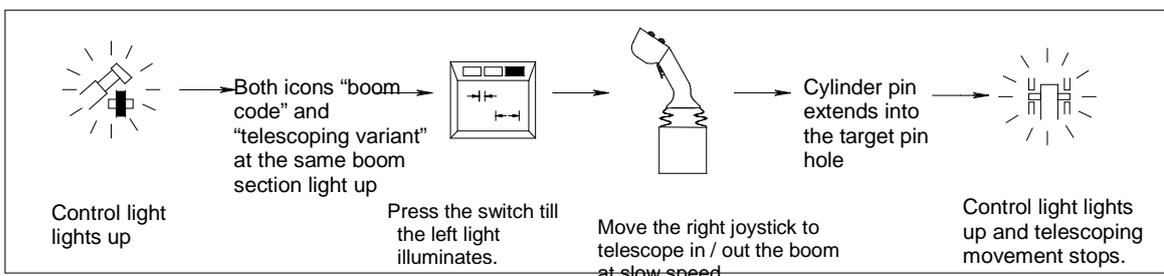


Figure 4-40 Lock the telescoping cylinder

c) Pin the telescopic section

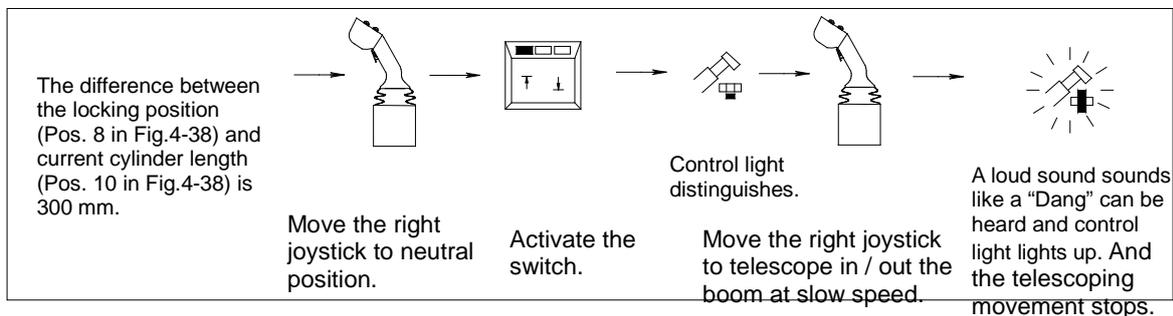


Figure 4-41 Pin the telescopic section



In the program, initiate the movement "Telescope boom out / in" slowly if boom pin is released. Turn the switch "Pre-selection of normal speed / low speed / extremely low speed" to the right position to apply the slow gear to the telescoping movement.

It is recommended to activate the right joystick and slowly telescope the boom in / out to prevent the boom pin from exceeding its target pin hole.

d) Unpin the telescopic section

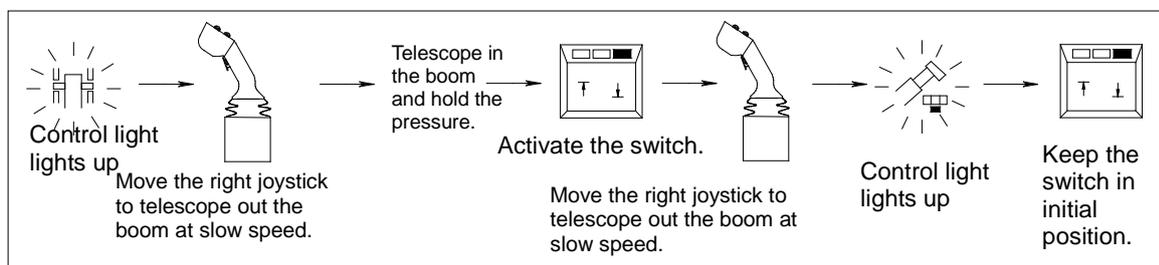


Figure 4-42 Unpin the telescopic section



Make sure the telescoping cylinder is locked and the boom pin is operational (the two icons on the right light up) before unpinning the telescopic sections.

If the icon "Boom pinned" goes out after the switch "Pre-selection of cylinder pin / boom pin operation" is set to the right position, but icon "Boom unpinned" does not light up and the value shown on pressure gauge keeps about 130 bar.

- 1) Stop closing the boom pin.
- 2) Release boom pin till icon "Boom pinned" lights up.
- 3) Close the boom pin again.

! CAUTION

- 1) **During manual telescoping, slowly telescope the boom with a large boom angle (slow gear is recommended) if the boom section is unpinned. Icon "Boom pin operational" must be lighting up during boom telescoped-in process. Accelerate telescoping operation after the telescoping cylinder retracts for a certain length.**
 - 2) **In automatic telescoping operation, examine the icon "Boom pin operational" for illumination. If not, grease the boom sections.**
- e) Limitations for manual telescoping operation
- The movement "Extend the telescoping cylinder" will be switched off automatically to prevent the telescoping cylinder from being damaged if following prerequisites are met:
- 1) All telescopic sections are fully retracted.
 - 2) Telescoping cylinder is unlocked.
 - 3) Telescoping cylinder is in the tail of telescopic section VI.
 - 4) Continually extends till the icon "Boom code" of the boom section VI distinguishes.
- f) Methods for identifying which boom section is carrying out movement
- Observe the boom code from the following area of Figure 4-43.



Figure 4-43 Current telescopic section display

The icon of telescopic section I is highlighted in green which indicates the telescopic section I is to carry out relevant movements.

- g) If the boom section is unpinned, position 10 (Telescoping cylinder unlocking position) in Figure 4-38 displays the current pin hole position, and position 12 (Telescoping cylinder locking position) displays the target pin hole position. The length of the cylinder changes in real-time with movement of the joystick.

Note:

Cylinder length 1 indicates the position to close the boom pin. Cylinder length 2 indicates the position to open the boom pin. Refer to Figure 4-38.

The length of telescoping cylinder shown in icon 7 will vary with the moving of joystick.

- h) Position 5 (Target telescopic section) in Figure 4-38 indicates that the corresponding boom section highlighted in green will carry out relevant movements in manual telescoping mode. For example, in screen "Boom status during manual telescoping" (Figure 4-38), the highlighted section is telescopic section 1. So, the telescopic section 1 is to carry out telescoping movements.



- (1) In the automatic telescoping operation, the telescoping cylinder will drive the boom to retract automatically if the telescopic section is unpinned (the control light "Boom unpinned" lights up).**

If the boom does not retract for a long time:

- Change into manual telescoping.
- Extend the boom for 5 – 14 mm with slow gear (the second stage).
- Retract it again with slow gear (the second stage).

Note:

Crane movements "Telescope" have 2 stages:

- 1 (extremely slow): intermediately deflect the right joystick to the right / left
- 2 (slow): fully deflect the right joystick to the right / left

In this case, the operator must observe the above procedures. Otherwise, risk of great impact on the boom during retracting.

- (2) If the boom pin cannot be closed during the process of telescoping in the boom automatically:**

- Change into manual telescoping.
- Open the boom pin manually until the icon "Boom pinned" lights up.
- Change to automatic telescoping again.

If the boom pin still cannot be closed, repeat above steps.

- (3) If the icon "Boom telescoping fault" lights up during automatic telescoping operation under the condition that the crane has worked for a long time:**

- Change automatic telescoping to manual telescoping.
- Extend the telescoping cylinder with slow gear (the second stage) until the length of the telescoping cylinder varies.

If the control light "Boom pin operational" lights up during extending the cylinder, retract the telescoping cylinder till both the control light "Cylinder pin exceeding its target hole" and control light "Cylinder pin not reaching its target hole" all light up.

- Change to automatic telescoping again.

4.2.2.5 Overload protection and cancel

a) Overload protection strategy

When the weight percentage exceeds 115%, the crane is seriously overloaded. The main interface will show the serious overload warning prompt (as shown in Figure 4-44). Meanwhile, the control system will switch off the crane movements “Spool the winch up” and “Derrick down”. If it is intermediate and short boom OM at this time, the crane movement “Derrick up” will be switched off simultaneously when the weight percentage exceeds 125%.



Figure 4-44 Main interface serious overload warning prompt



In order to ensure the vehicle safety and reduce the movement impact, the speeds of crane movements “Winch”, “Derricking” and “Slewing” will be limited after overload.

Pay special attention to the crane operation!

b) Time-limited unlocking method

If you need to cancel the limit in a special condition, dial the 400 telephone or operate the corresponding APP software.

Do the items that follow to cancel the limit.

- Press the key  in the main interface to enter into the serious overload time-limited unlocking interface. Refer to Figure 4-45.

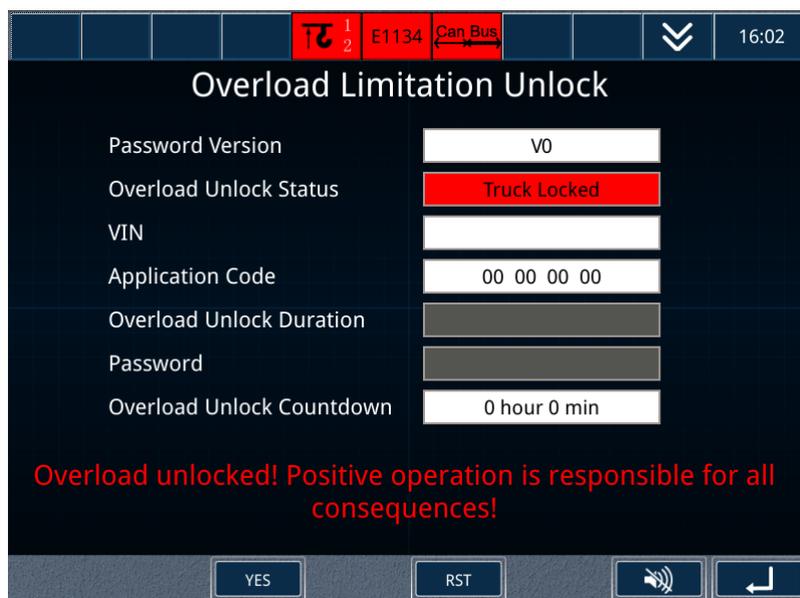


Figure 4-45 Serious overload time-limited unlocking interface

- 1) Stop the engine and keep the ignition starter switch in Position ON.
- 2) Tell the 400 customer service or input the mobile phone APP: VIN, request code and request unlocking time in the serious overload time-limited unlocking interface.
- 3) And the App on your mobile phone calculate the dynamic password in the following way:
 - When the crane state is “stop”, activate the APP “Zoomlion E Manager” , and enter into the interface “Equipment details” of the crane to be unlocked, click the icon “Overload unlocking”. And then, a password calculation interface will pop up. In this interface, input the application unlocking duration. And this APP will calculate the dynamic password automatically.

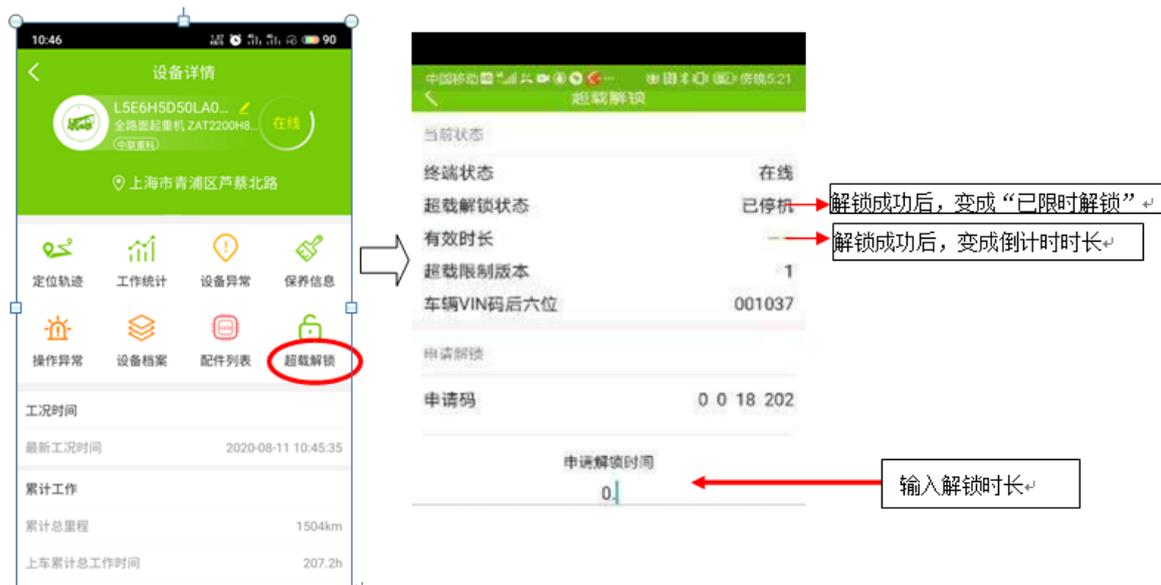


Figure 4-46 Calculate the dynamic password, App on your mobile phone

Note:

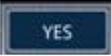
解锁成功后，变成“已限时解锁”

This line will change into “Already unlocking in a limited time” after you succeed in unlocking the crane.

解锁成功后，变成“倒计时时长”

This line will change into “Commence the countdown” after you succeed in unlocking the crane. 输入解锁时长

Input the unlocking duration.

- 4) Calculate the dynamic password.
 - Input the application unlocking duration and the dynamic password on the overload limitation unlock interface.
 - Press the key “” after confirmation.

After unlocking, the crane state changes from “stop” to “unlock within limit time”. The overload unlock countdown will be displayed on the overload limitation unlock interface. Meanwhile, the main screen will display the remaining time of overload unlocking at real time. Refer to Figure 4-47. The crane can lift the load within the unlocking time by the bypass key switch.



Figure 4-47 Remaining unlocking time display, main interface



When the crane is seriously overloaded, there are duplicate records about the overload data and the unlocking data. After removing the overload protection, pay attention to the crane operation with the utmost care!

The customer will bear the consequences and the losses caused by removing the overload protection by himself!!!

4.3 Starting up the crane

4.3.1 Checks before starting up

Make sure that the following prerequisites are met before starting up:

- a) Examining the engine oil level
 - 1) The crane has been leveled.
 - 2) Pull out the dipstick and clean it.
 - 3) Re-insert it into oil and pull out again.
 - 4) Examine whether the oil level is between MIN. and MAX. marks.



If the oil level is lower than the MIN. mark, fill oil. Otherwise, the engine will be damaged seriously!

4.3.1.1 Examining the oil level in the hydraulic oil tank

The oil level in the hydraulic oil tank must be between MIN. and MAX. marks.

Turn the shutoff gate valve as the figure shown to connect the hydraulic oil tank with the oil line. Refer to Figure 4-48.

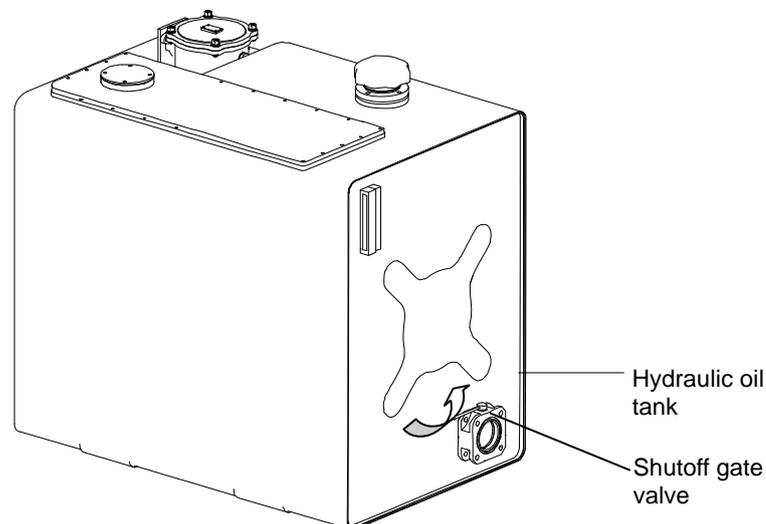


Figure 4-48 Shutoff gate valve

4.3.1.2 Examining the fuel reserve

The fuel reserve is displayed on the fuel gauge in the driver's cab. Examine the fuel reserve and add fuel if necessary.



(1) Deaerate the fuel system before adding fuel.

If the fuel tank has been run dry, always deaerate the whole fuel system.

Do not run the fuel tank dry!

(2) The reasonable change interval of fuel hose is 24 months or 2000 working hours.

4.3.1.3 Examining the coolant level

Make sure that the engine coolant is at the correct level. Add more if below the cold engine level.

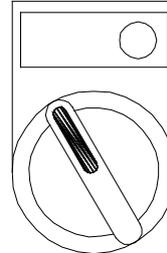
4.3.1.4 Examining general conditions of crane

- 1) Examine lubrication status of each moving parts and make sure that all moving parts are lubricated. Add grease if necessary.
- 2) Make sure that the crane is properly supported on a level load-bearing surface, and has been set up horizontally.
- 3) Make sure that the gear of the slewing bearing connection is clean.
- 4) Make sure that the front and rear parts of oil cooler and A/C radiator have been cleaned and are free of blockage.
- 5) Make sure that there are no people or objects in the crane danger zone.
- 6) Make sure that the wire rope, cable / rope drums and sensors are free of snow and ice.
- 7) Make sure that there are no loose parts on the superstructure or the telescopic boom.
- 8) Set the joysticks in the neutral positions before you start the superstructure engine.
- 9) Make sure that the parking brake is applied.

4.3.2 Starting the engine

4.3.2.1 Switching on the battery master switch

- 1) The battery master switch near the battery on slewing table is switched on.
- 2) The switch background lights up.
- 3) The superstructure is energized.

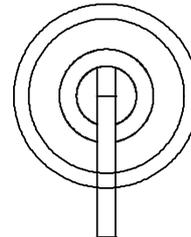


4.3.2.2 Ignition starter switch

There are two positions in clockwise direction.

Right position 2:

When the key is turned from right position 1 to right position 2, the engine starts.



- (1) Release the key to position 1 when the engine starts. Return the key to the “0” position first if you want to restart the engine.
- (2) Do not run the motor for 15 seconds continuously. The motor can be operated twice per attempt with a pause in between of several minutes to avoid battery discharging electricity and starting motor being damaged. If the engine cannot be started after 3 attempts, rectify the malfunctions before you start the engine again.

4.4 Safety devices

4.4.1 Support control unit

To ensure the working safety of the crane, the crane must be properly supported on a level load-bearing surface, and be set up horizontally.

A support control unit with buttons is attached to each side of the vehicle for operating the outriggers, together with an electronic inclinometer from which the operator can observe horizontal alignment of the crane. Refer to Figure 4-49.



The maximum permitted deviation from the horizontal position of the crane is $\pm 0.4^\circ$. Otherwise, fatal accidents may be increased.

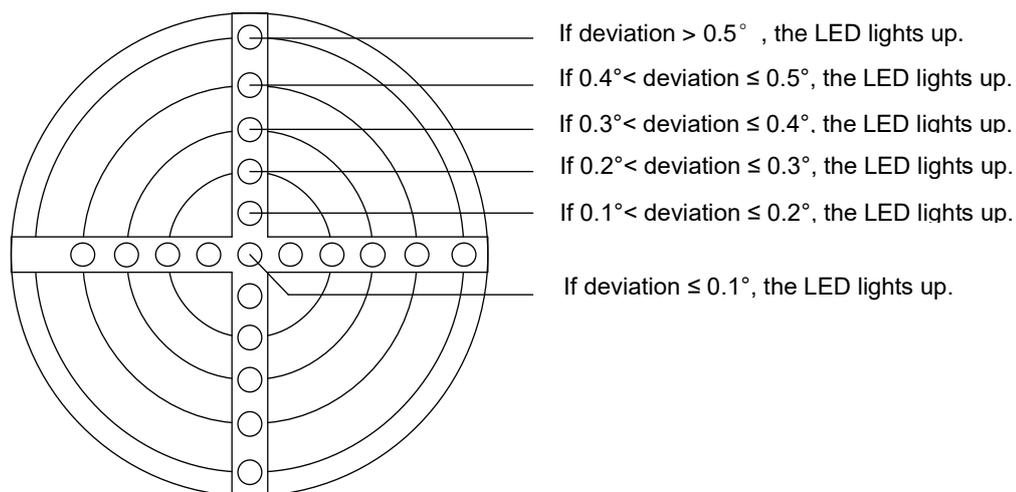


Figure 4-49 Electronic inclinometer

4.4.2 Load moment limiter

The load moment limiter is a vital safety device for controlling and monitoring the movements of the crane.

The "Advance warning" icon appears and the buzzer sends out slow acoustic warning if the current load exceeds the (90%) limit programmed in for advance warning.

The "Stop" icon appears, the buzzer sends out fast acoustic warning and all dangerous crane movements are switched off if the current load exceeds the 100% mark.

The crane can only work towards safe directions till the dangerous operation is deactivated.

4.4.3 Hoisting limit switch

The hoisting limit switches installed on the main boom, jib or rooster sheave are intended to prevent the hook block from colliding with the rope pulley. When the distance detected between the hook block and the pulley is less than the safety one, the hoisting limit switch is triggered and the buzzer sounds the alarm. The crane movements "Spool up winches", "Derrick down" and "Telescope out" are switched off. At this time, only the crane movements "Reel off winches", "Derrick up" and "Telescope in" can be switched on. Refer to Figure 4-50.

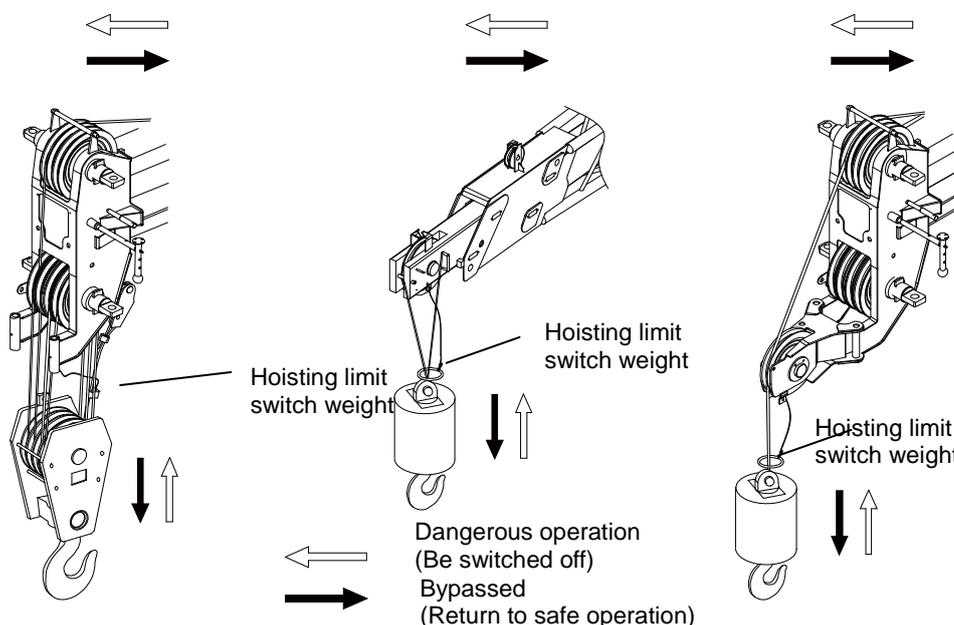


Figure 4-50 Hoisting limit switch

Turn the bypass key switch "Winch in the spool-up mode" on the instrument panel to the right position to bypass the switch-off during commissioning and maintenance.



Do not use the bypass key switch when you do usual crane operations.

How to connect and install the hoisting limit switches for the auxiliary winch and rooster sheave:

- a) When the jib is used:
 - 1) Remove the aviation socket on the position "S ↑ II" of the junction box.
 - 2) Install aviation socket which is connected to the hoisting limit switch for the auxiliary winch into the junction box.
 - 3) Connect the plug on the jib to the socket on the main boom head.

Refer to Figure 4-51.

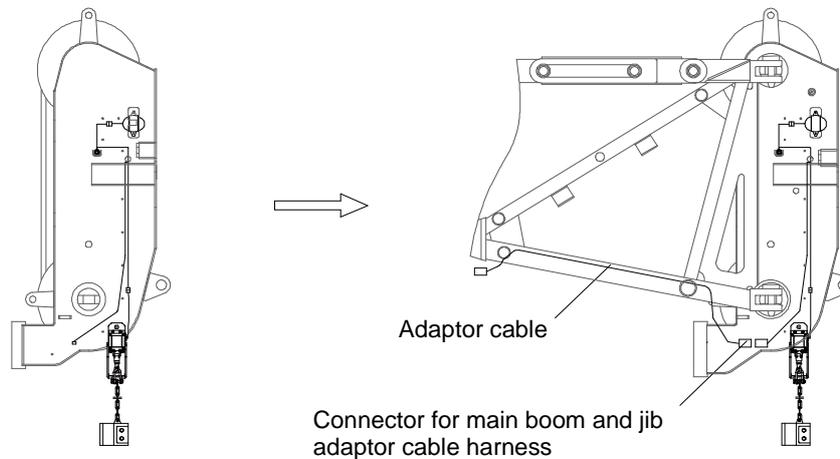


Figure 4-51 Connection and installation of hoisting limit switch for the auxiliary winch

b) When the rooster sheave is used:

- 1) Remove the hoisting limit switch for the auxiliary winch.
- 2) Install the hoisting limit switch onto the position shown in Figure 4-68.
- 3) Connect the plug on the hoisting limit switch to the socket on the rooster sheave.
- 4) Remove the aviation socket on the position “ $\text{⤵} \uparrow \text{II}$ ” of junction box.
- 5) Connect the aviation socket on the hoisting limit switch for the auxiliary winch into the junction box.
- 6) Connect the plug on the rooster sheave to the socket on the main boom head.

Refer to Figure 4-52.

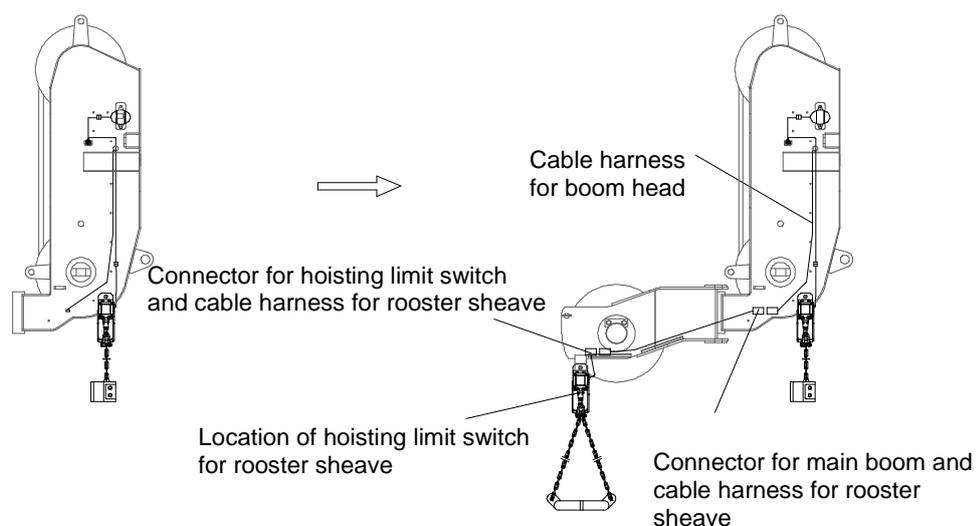


Figure 4-52 Connection and installation of hoisting limit switch for the rooster sheave

4.4.4 Lowering limit switch

In order to prevent the wire rope from being spooled up automatically after being reeled off completely, the lowering limit switch installed beside the winch will automatically switch off the movements "Reel winches off" if there are only 3 wraps of wire rope remaining on the winch.

In this case, the buzzer sounds the alarm, the warning light illuminates and only the upward movement of the hook is permitted. During commissioning and maintenance, activate the bypass key switch "3wraps of wire-rope on main winch" to bypass the switch-off. Refer to Figure 4-53.



Do not use the bypass key switch when you do usual crane operations.

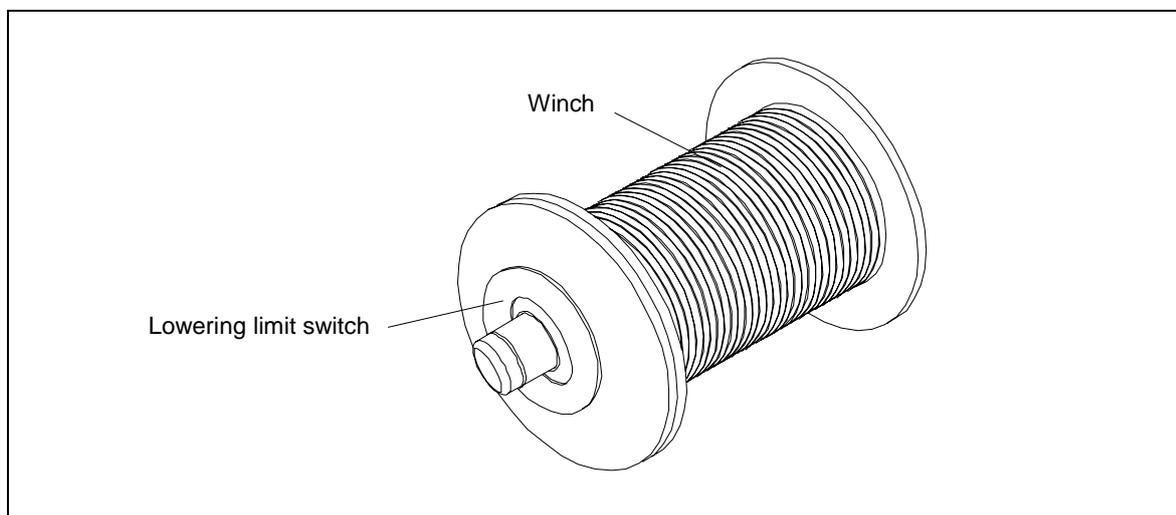


Figure 4-53 Lowering limit switch

4.4.5 Hydraulic safety devices

- a) Relief valves in the hydraulic system

The relief valves in hydraulic system can prevent the pressure in the circuit from rising too high, thus avoid hydraulic pump and hydraulic motor from being damaged and hydraulic system from being overloaded.

- b) Outrigger lockout device

If the high-pressure oil pipe which is connected to vertical cylinder is damaged, the two-way hydraulic lock in the outrigger hydraulic circuit can block the pressure oil in both sides of outrigger cylinder to prevent the outrigger from retracting or extending, and thus ensure the safe operation of the crane.

- c) Lockout device for crane movement "Derrick up"

If the high-pressure oil pipe in the hydraulic circuit of derricking cylinder is damaged, the balance valve in the hydraulic circuit can lock the hydraulic oil in the piston side of

derricking cylinder immediately to prevent the boom from derricking down, and thus ensure the safe operation of the crane.

d) Lockout device for crane movement "Telescope out"

If the high-pressure oil pipe in the hydraulic circuit of telescoping cylinder is damaged, the balance valve in the hydraulic circuit can lock the hydraulic oil in the piston side of telescoping cylinder immediately to prevent the telescopic sections from retracting naturally, and thus ensure the safe operation of the crane.

e) Safety device for counterweight

If the high-pressure oil pipe which is connected to counterweight lifting cylinder is damaged, the two-way hydraulic lock in the counterweight hydraulic circuit can block the pressure oil in both sides of counterweight lifting cylinder to prevent the cylinder from retracting or extending, and thus ensure the safe operation of the crane.

f) System pressure monitoring

There are 3 pressure gauges installed on both sides of the hood of the slewing table. For pressure gauges on the left side of the slewing table, please refer to Figure 4-54. For pressure gauges on the right side of the slewing table, please refer to Figure 4-55. The pressure gauges show and monitor the pressure of the hydraulic system of the superstructure under different OMs.

Note:

The load moment limiter in the operator's cab also shows the pressure in real time. Refer to Figure 4-20-2.

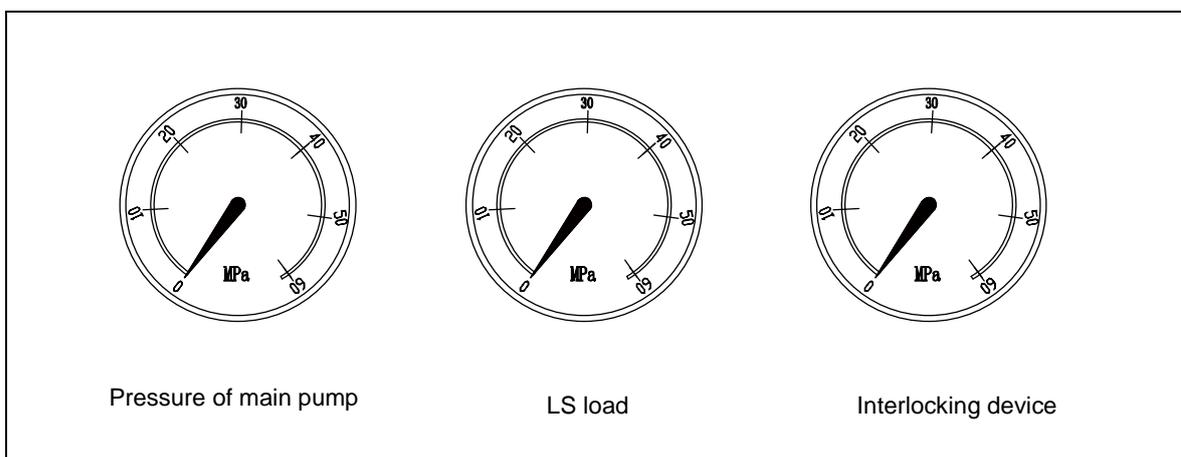


Figure 4-54 Pressure gauges on the left side of slewing table

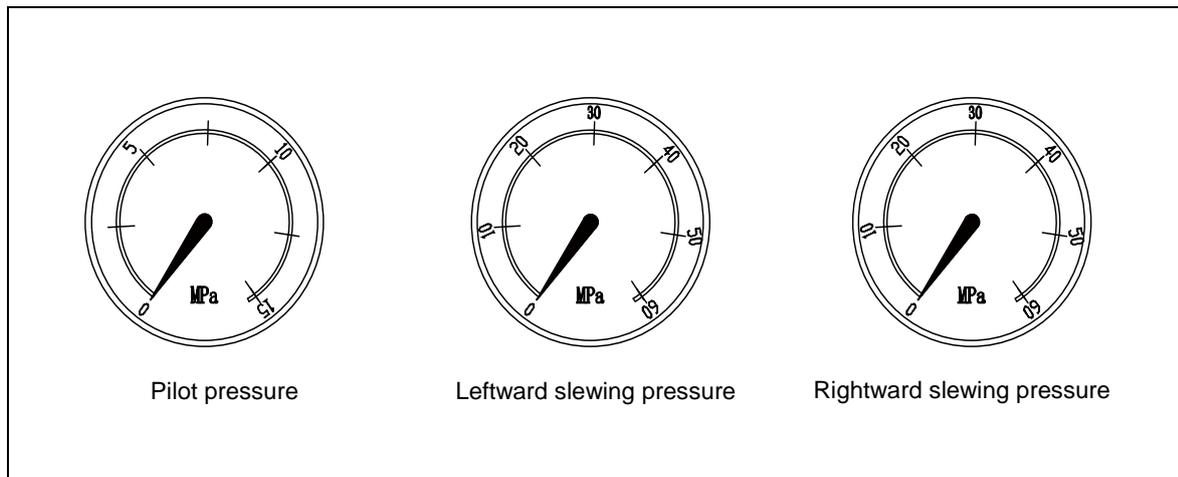


Figure 4-55 Pressure gauges on the right side of slewing table

Pressure ranges are as follows:

Pressure of spooling up oil circuit in main / auxiliary winch: ≤ 32 Mpa

Pressure of reeling off oil circuit in main / auxiliary winch: 6 MPa – 8 MPa

Pressure of derricking up oil circuit: ≤ 32 Mpa

Pressure of derricking down oil circuit: 4 MPa

Pressure of telescoping out oil circuit: ≤ 15 Mpa

Pressure of telescoping in oil circuit: ≤ 25 MPa

Pressure of slewing oil circuit: ≤ 35 MPa

Pressure of control oil circuit: (3.5 ± 0.5) MPa.

4.4.6 Bypass operation

When the hoisting limit switch or lowering limit switch is triggered, or when the crane sensor senses that the load weight is more than the load weight in the system, the system will switch off the dangerous movements and the buzzer sounds.

If necessary, bypass this switch-off via the bypass key switch on the instrument panel. For details, please refer to Section 4.1.3. For movements allowed or blocked under overloading, overwinding and overlowering conditions, refer to Table 4-10.

Table 4-10 Movements allowed or blocked
under overloading, overwinding and overlowering conditions

Operation	Main winch		Auxiliary winch		Derrick		Slew		Telescope	
	up	down	up	down	up	down	left	right	out	in
Overloading	x	√	x	√	√	x	√	√	√	√
Overwinding	x	√	x	√	√	x	√	√	x	√
Overlowering	√	x	√	x	√	x	√	√	√	√

Note: "x" means that the system will switch off the movement. "√" means that the system will not switch off the movement.



If there is a need to lift or lower the hook a little under special conditions, the operator can activate the "Bypass key switch" on the instrument panel to bypass the switch-off movements. Such operation should be performed with utmost caution to avoid accident. Do not telescope the telescopic boom with a suspended load. The boom angle must exceed 80°. Otherwise, you must bear full responsibility for all the consequences arising therefrom.

4.4.7 Wind speed warning system

The anemometer is fitted on the main boom head to detect the wind speed in real time. Refer to Figure 4-56. The wind speed is displayed on the monitor of load moment limiter. If the actual wind speed exceeds the maximum value, while the crane is in operation, do the tasks that follow:

- Stop the work (safely lower the load).
- Retract the boom.
- Correctly stow the boom.

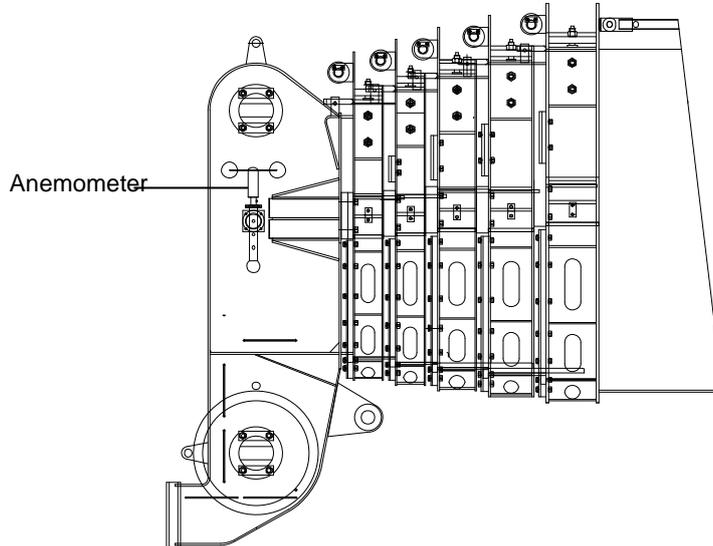


Figure 4-56 Anemometer

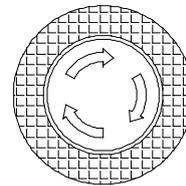


The crane can topple over!

If the crane is operated at wind speeds which are larger than the maximum permissible value, then it can topple over!

4.4.8 Emergency stop button

You can find the emergency stop button on the instrument panel in the operator's cab. When you push the button, all crane operations immediately STOP (including the engine). Turn the button clockwise to release it and continue usual crane operations.



Only use the button in a clear emergency!

4.5 Crane operation

4.5.1 Preparations for crane operation

Make sure that following checks are operated before operation:

- a) Assess the load condition prior to lifting it.
- b) Examine the crane position, ground condition and surface bearing condition.
- c) Examine wire ropes (including wire rope end, winding drum and pulleys).
- d) Examine the liquid level and power source of the crane.

Note:

- (1) Examine the fuel gauge to make sure the fuel reserve is more than 1/4 of the tank capacity.
 - (2) The oil level in hydraulic oil tank should be between MIN. and MAX. marks in driving condition.
- e) The loading and working area should be visible and without obstacles within it. Examine the communication system of operator and supervisor to make sure that nothing will hinder the operation.
 - f) Examine safety devices for function.
 - g) Remain the communication between the operator and the rigger.



Risk of accident!

Danger of damaging the crane!

Always operate the joysticks slowly and sensitively.



Make sure that there are no obstacles in the crane working area and no persons in danger zone. Give a short warning signal (horn) before starting a crane movement.

4.5.2 Derricking

To move the boom up or down (derricking), hydraulic oil is "pumped in" or "vented out" of one "derricking cylinder".

The boom angle (derricking) can be adjusted from -1.5° to 82° , by the "derricking cylinder".

Turn the switch "Pre-selection of derrick / telescope" to the derrick position. Refer to Figure 4-57.

Operate the right joystick to derrick the boom up / down.

The boom length and derricking speed have an inverse relationship. Therefore, the longer the boom length is, the slower the derricking speed is. And the shorter the boom length is, the higher the derricking speed is.

Speed of crane movement "Derricking" has 3 stages, normal speed, low speed and extremely low speed.

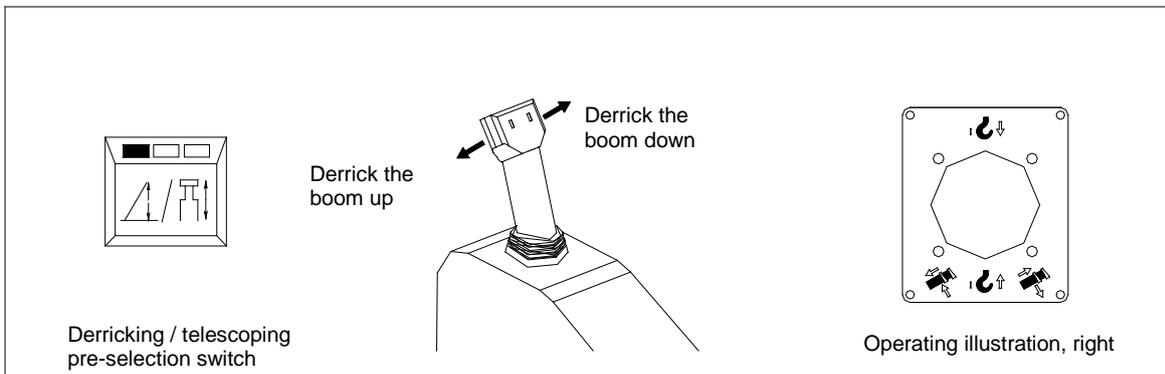


Figure 4-57 Derricking

The "derricking cylinder" has a "balance valve". The "balance valve", in the hydraulic system, helps the derricking components move smoothly. When the boom is set at the correct position, the valve stops the hydraulic oil flow out of the "derricking cylinder". This helps to lock the boom in position.

CAUTION

- (1) Do all derricking movements smoothly. You can cause damage to the crane if you move the load up or down with quick stops.
- (2) You can cause a dangerous condition if you try to lift a load with the boom at a low angle. Make sure that you obey the lifting capacity tables.
- (3) Lower the hook fully before you derrick up the boom.
- (4) For the sake of safety, do not derrick down the boom at high speed.

4.5.3 Boom telescoping

The boom consists of 7 oval boom sections made from low-alloy and high-tensile steel.

The telescopic boom is telescoped in / out automatically via a telescoping cylinder. For manual operation, you can operate the right joystick to telescope the boom in / out. Every telescopic section can be varied in 4 lengths: 0% of its total, 46% of its total, 92% of its total and 100% of its total. The telescoping cylinder cannot bear any load.

Before telescoping, turn the switch "Pre-selection of derrick / telescope" to the telescope position.

Refer to Figure 4-58.

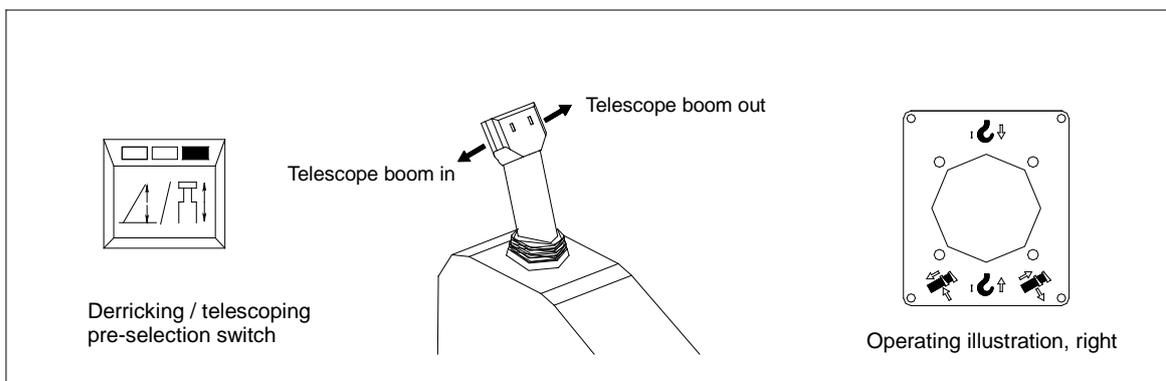


Figure 4-58 Boom telescoping

For the details of telescoping operation, refer to Section 4.2.2.4.

The "balance valve", in the hydraulic system, helps the telescoping components move smoothly. When the boom is set the correct length, the valve causes a blockage of the hydraulic oil flow out of the cylinder. This helps to lock the boom in position.

CAUTION

- (1) When auto telescoping mode is performed, the boom angle should exceed 80°.
- (2) The hook will be lifted or lowered with the crane movements "Telescope telescopic boom in or out". Therefore, operate the joystick to adjust the height of hook during telescoping.
- (3) Carry out telescoping movements with maximum care and minimum speed. Do not telescope the telescopic boom with a suspended load.
- (4) Do not telescope the boom out immediately after the boom is telescoped in. Initiate telescoping movement after 2 seconds.
- (5) Do not pull a load at an angle to avoid lateral force on the boom.

Before you carry out telescoping movement, examine whether the block at the head of telescopic sections is in contact with its adjacent telescopic sections tail completely. If not, adjust the shim to make them contact completely and make sure that the boom pin and cylinder pin bear no load under the condition of "Boom telescoped in completely".

4.5.4 Lifting / lowering

The hoist gear consists of hydraulic motor, balance valve, reducer, brake, lowering limit switch, hoisting limit switch, wire rope, main hook, auxiliary hook and so on.

The hoist gear consists of two parts: main winch and auxiliary winch. You should remove the auxiliary winch from the slewing table before driving. The main / auxiliary winch is controlled by the right or left joystick in the operator's cab. Refer to Figures 4-59 and 4-60

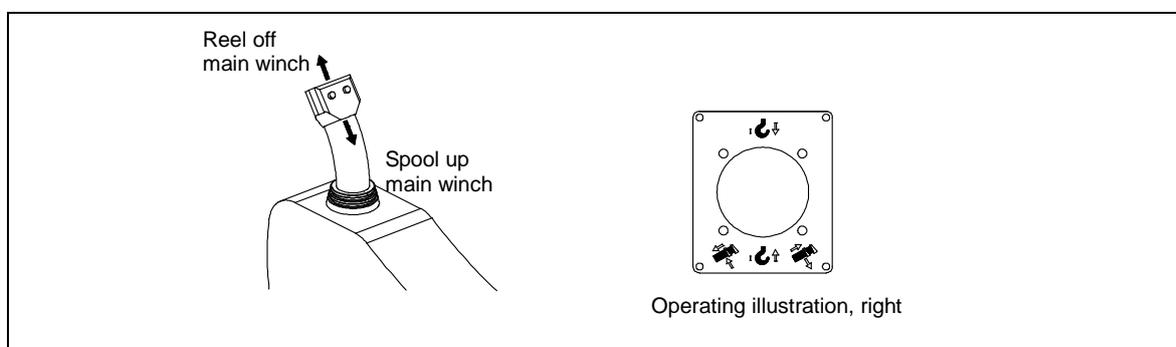


Figure 4-59 Spooling up / reeling off main winch

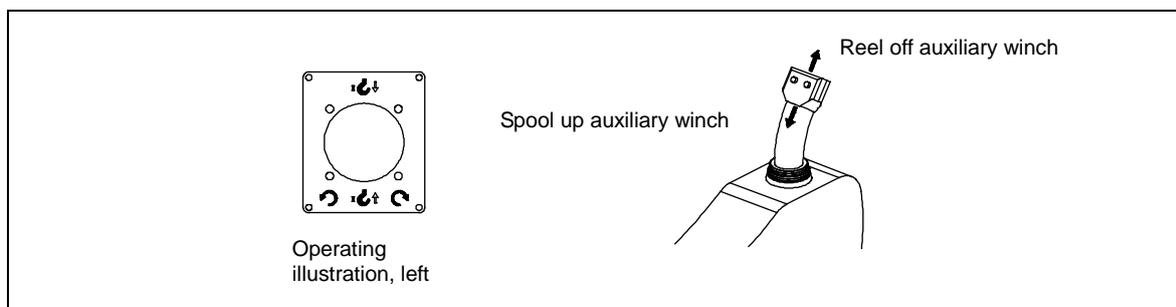


Figure 4-60 Spooling up / reeling off auxiliary winch

The crane movement "Spool up main winch" or "Reef off main winch" has 4 stages: high speed, normal speed, low speed and extremely low speed.

The crane movement "Spool up auxiliary winch" or "Reef off auxiliary winch" has 3 stages: normal speed, low speed and extremely low speed.

For detailed operation, please refer to Section 4.1.3.

Main winch:

High speed

- Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the left position.

- Press the button “Rapid gear for main winch” on the right joystick.
- Deflect the right joystick forward or backward.

Result:

Rapid gear is applied to crane movements "Spool up main winch" and "Reef off main winch". The balance valve in the hoist gear makes sure that the movement of the hoist is stable. It also makes the load stop at the necessary location.

When you increase the boom length and height, you must increase the length of the hoist rope. You can change the reevings to get a longer rope. You must install the hoisting limit switch weight before you change the parts. For standard reeving numbers for various boom lengths, please refer to the lifting capacity tables.



- (1) Choose the correct reevings for the boom length and load weights.
- (2) Keep a minimum of 3 wraps of rope on the winch while you operate the crane.
- (3) Monitor the area as you lift a load. Do not move a load unless the conditions are safe.
- (4) Do not derrick the boom up and extend the boom at the same time if:
 - The crane has a part of the load weight.
 - The crane is connected to a load on the ground.
- (5) Do not change quickly between "reel off" and "spool up". Let the winch stop before you continue to move the hook. Otherwise, the machine will be damaged.
- (6) The slings must be of enough strength.
- (7) The lifting capacity includes the mass of the hook and slings.

4.5.5 Slewing

The slewing system consists of a slewing bearing and slewing gear which includes hydraulic motor, planetary gear reducer, slewing brake valve, brake, drive gear and so on.

a) Slewing speed

The speed of the crane movements “Slewing”, varying within 0 r/min. – 1.5 r/min., is controlled by the deflection of the left joystick. The slewing speed has 3 stage, normal speed, low speed and extreme low speed, which can be activated by the switch “Pre-selection of normal speed / low speed / extremely low speed”. The low speed offers good micro-positioning performance.

b) Slewing operation

Slewing movements can be activated by the deflection of the left joystick fitted in the operator's cab. Refer to Figure 4-61.

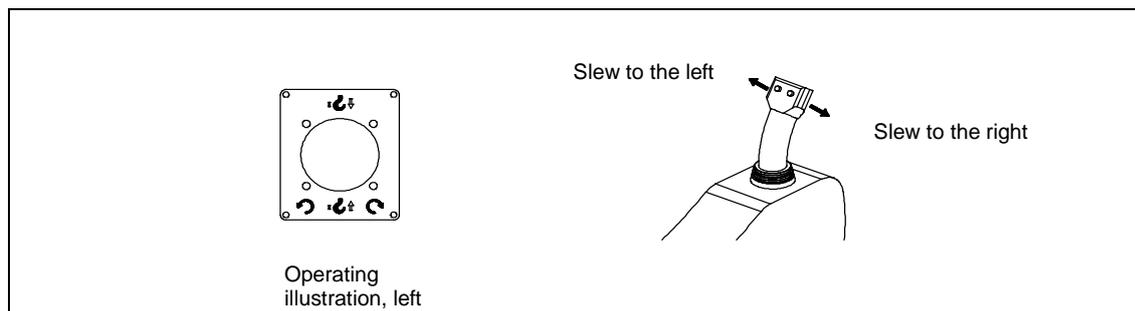


Figure 4-61 Slewing

CAUTION

- (1) Make sure that the slewing table is unpinned before initiating the slewing movement. Install the pin after finishing this operation.
- (2) Make sure that there are no obstacles in the crane slewing area and no persons in the danger zone. Give a short warning signal (horn) before starting a crane movement.
- (3) Make sure that you do not make fast movements or suddenly stop the slewing movement.
- (4) Longer boom – lower slewing speed.
- (5) Heavier load – lower slewing speed.
- (6) When you operate a new crane, examine the slewing bearing bolts after the initial 100 working hours. After that, examine the bolts at these intervals: 100, 300 and 500 hours of operation.
 - The torque on the bolts must be 2350 N·m.
- (7) Turn the switch “Pre-selection of counterweight remote control box / remote controller” to the neutral position. Otherwise, buttons and switches on the instrument panel are inactivated and the left joystick cannot initiate slewing movements. The slewing movement is still controlled by the remote controller.

4.5.6 Simultaneous crane movements

When carrying the simultaneous crane movements “hoist” and “derrick”, you should press the button “shunt” to obtain better operation performance.

The crane can do two operations at the same time. This increases the quantity of work that the crane can do and greatly improves the work efficiency. However, because the simultaneous crane movements are toward two different directions, the operator should take maximum care to avoid accident.

Before you start, make sure that you examine or do the items that follow:

- The hydraulic system works correctly and gives a sufficient flow for simultaneous crane movements.
- Make sure that you increase the engine RPMs (Engage the PTO).

- Do not move the joysticks to their limit positions. Easy, smooth movements are necessary when you do an operation for simultaneous crane movements.

There are 9 simultaneous crane movements available:

a) Auxiliary winch + Main winch

To move the auxiliary winch and the main winch at the same time, move (push and/or pull) the left and right joysticks. The auxiliary hook and main hook move up and/or down. Refer to Figure 4-62.

- 1) The more the joysticks are deflected upward or downward, the faster the relevant movements will be.
- 2) Press and hold button "Rapid gear for main winch" with the "Pre-selection of normal speed / low speed / extremely low speed" to the left position to achieve rapid movements of main winch.
- 3) Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the neutral or right position to make relevant movements get slower.

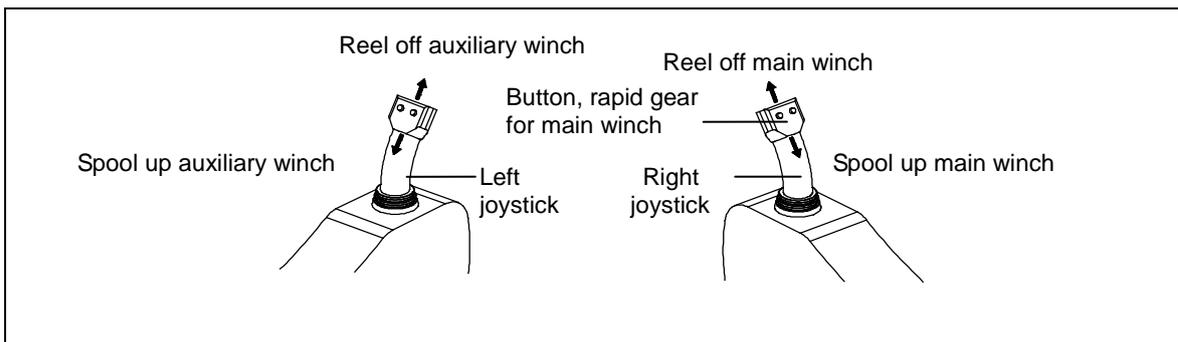


Figure 4-62 Auxiliary winch + Main winch

b) Auxiliary winch + Derrick

You can move the auxiliary hook up or down and derrick the boom up or down at the same time. To do this, push or pull the left joystick and move the right joystick left or right. Refer to Figure 4-63.

- 1) Set the switch "Pre-selection of derrick / telescope" (on the left control box) to the derrick position.
- 2) The more the left joystick is deflected upward or downward and right joystick is deflected leftward or rightward, the faster the relevant movements will be.
- 3) Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the neutral or right position to make relevant movements get slower.

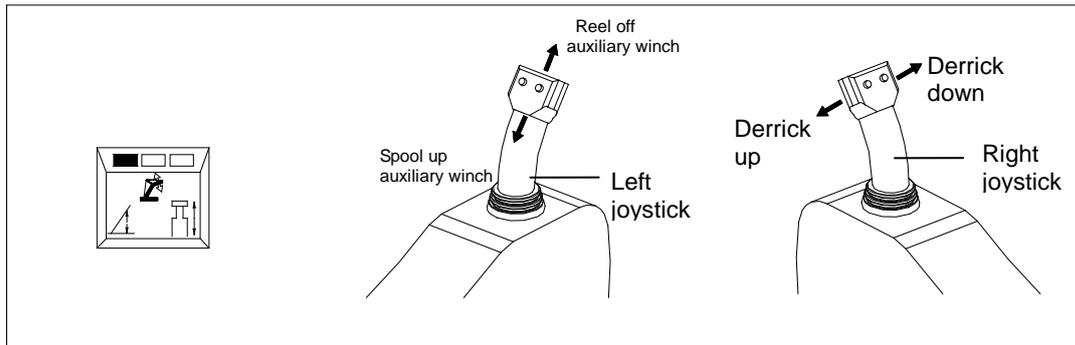


Figure 4-63 Auxiliary winch + Derrick

c) Auxiliary winch + Telescope

You can move the auxiliary hook up or down and telescope the boom out / in at the same time. To do this, push or pull the left joystick and move the right joystick left or right. Refer to Figure 4-64.

- 1) Set the switch "Pre-selection of derrick / telescope" (on the left control box) to the telescope position.
- 2) The more the left joystick is deflected upward or downward and right joystick is deflected leftward or rightward, the faster the relevant movements will be.
- 3) Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the neutral or right position to make relevant movements get slower.

Note:

When you select the automatic telescoping mode, the right joystick and the switch "Pre-selection of normal speed / low speed / extremely low speed" are invalid.

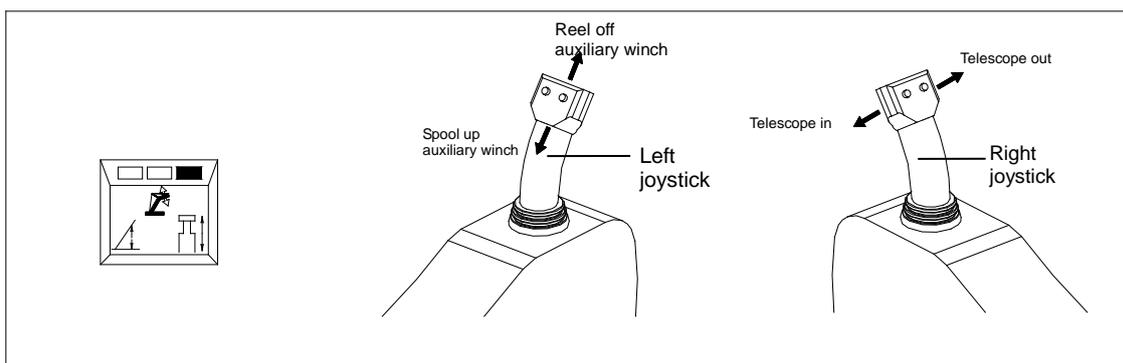


Figure 4-64 Auxiliary winch + Telescope



It is recommended to select the automatic telescoping mode for telescoping operation.

d) Slew + Main winch

You can slew to the left or right and move the main hook up or down at the same time. To do this, move the left joystick left or right and push or pull the right joystick. Refer to Figure 4-65.

- 1) The more the left joystick is deflected leftward or rightward and right joystick is deflected upward or downward, the faster the relevant movements will be.
- 2) Press and hold button "Rapid gear for main winch" with the "Pre-selection of normal speed / low speed / extremely low speed" to the left position to achieve rapid movements of main winch.
- 3) Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the neutral or right position to make relevant movements get slower.

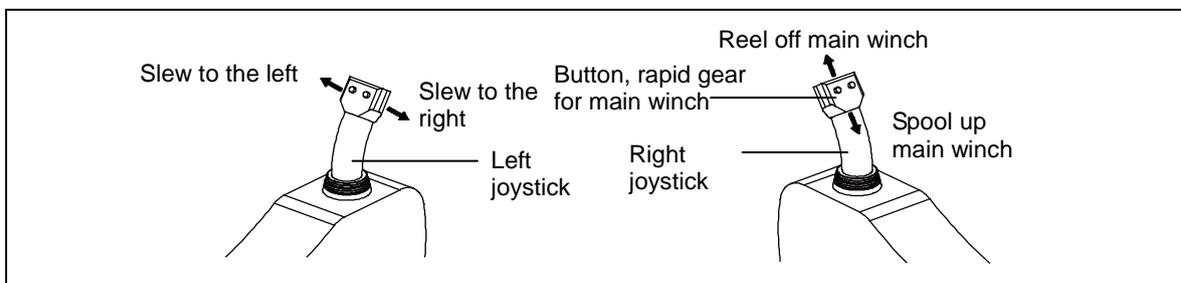


Figure 4-65 Slew + Main winch

e) Slew + Telescope

You can slew to the left or right and telescope the boom out / in at the same time. To do this, move the left and right joysticks to the left or right. Refer to Figure 4-66.

- 1) Set the switch "Pre-selection of derrick / telescope" (on the left control box) to the telescope position.
- 2) The more the left / right joystick is deflected leftward or rightward, the faster the relevant movements will be.
- 3) Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the neutral or right position to make relevant movements get slower.

Note:

When you select the automatic telescoping mode, the right joystick and the switch "Pre-selection of normal speed / low speed / extremely low speed" are invalid.

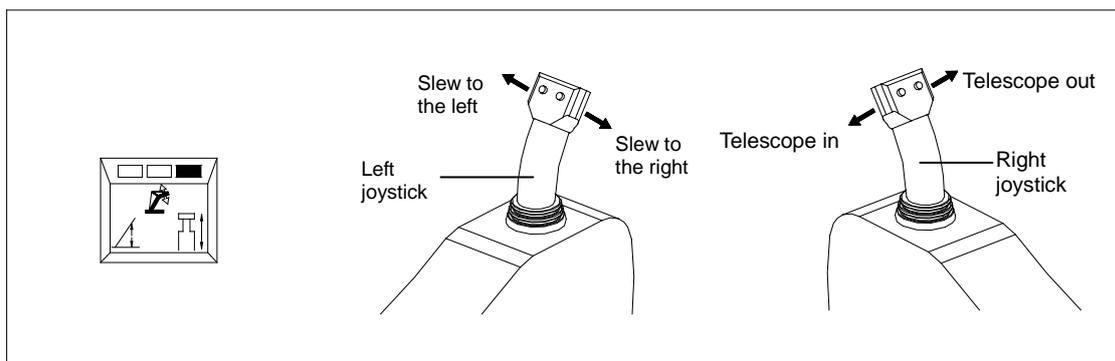


Figure 4-66 Slew + Telescope



It is recommended to select the automatic telescoping mode for telescoping operation.

f) Slew + Derrick

You can slew to the left or right and derrick the boom up / down at the same time. To do this, move the left and right joystick to the left or right. Refer to Figure 4-67.

- 1) Set the switch "Pre-selection of derrick / telescope" (on the left control box) to the left position.
- 2) The more the left / right joystick is deflected leftward or rightward, the faster the relevant movements will be.
- 3) Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the neutral or right position to make relevant movements get slower.

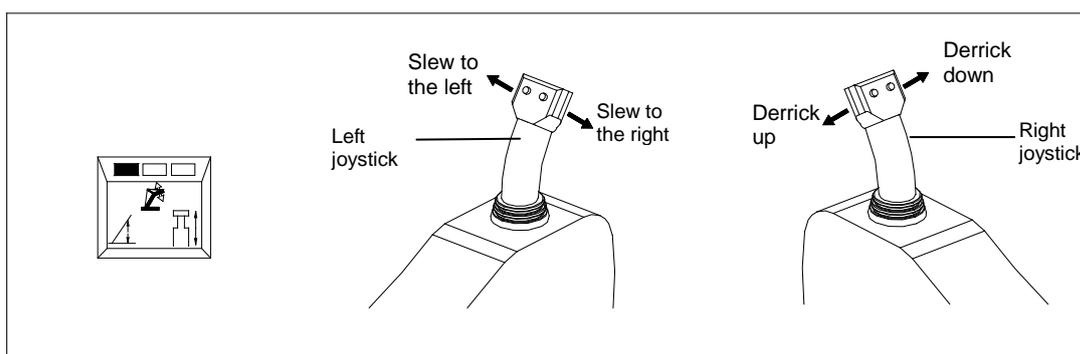


Figure 4-67 Slew + Derrick

g) Slew + Auxiliary winch

You can slew to the left or right and move the auxiliary hook up or down at the same time. For this type of move, it is necessary for the operator to move the left joystick two adjacent directions. For example, to move slewing table right and move the auxiliary hook down, push the left joystick up and to the right (1:30 clock position). Refer to Figure 4-68.

The other movements on the left joystick are as follows: (Refer to Figure 4-68.)

- 1) Push up and to the left (10:30 clock position) - the slewing table moves left and the auxiliary hook moves down.
- 2) Pull aft and to the right (4:30 clock position) – the slewing table moves right and the auxiliary hook moves up.
- 3) Pull aft and to the left (7:30 clock position) – the slewing table moves left and the auxiliary hook moves up.
- 4) The more the joystick is deflected leftward or rightward, the faster the slewing movements become and the slower the winch movements.
- 5) The more the joystick is deflected upward or downward, the faster the winch movements become and the slower the slewing movements.
- 6) Set the switch “Pre-selection of normal speed / low speed / extremely low speed” to the neutral or right position make relevant movements get slower.

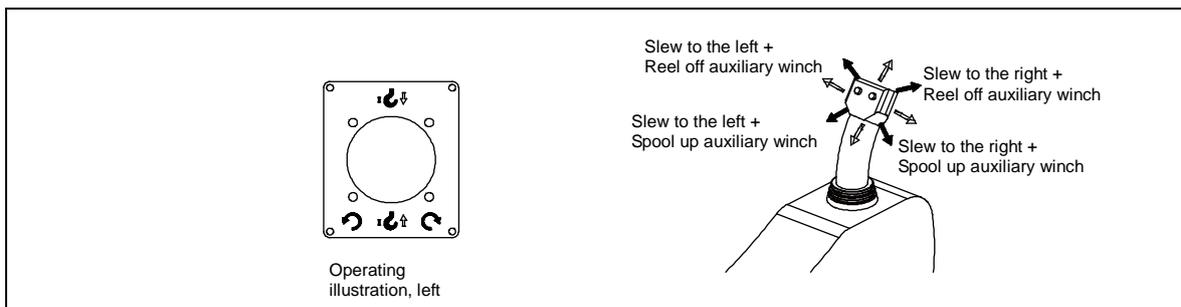


Figure 4-68 Slew + Auxiliary winch

h) Main winch + Derrick

You can derrick the boom up / down and move the main hook up or down at the same time. For this type of move, it is necessary for the operator to move the right joystick two adjacent directions. For example, to move the boom down and main hook down, push the right joystick up and to the right (1:30 clock position). Refer to Figure 4-69. The other movements on the right joystick are as follows:

Push up and to the left (10:30 clock position) – the boom moves up and the main hook moves down.

Pull aft and to the right (4:30 clock position) – the boom moves down and the main hook moves up.

Pull aft and to the left (7:30 clock position) – the boom moves up and the main hook moves up.

- 1) Set the switch “Pre-selection of derrick / telescope” to the left position.
- 2) Press and hold button “Rapid gear for main winch” with the “Pre-selection of normal speed / low speed / extremely low speed” to the left position to achieve rapid movements of main winch.
- 3) The more the joystick is deflected leftward or rightward, the faster the derricking

- movements become and the slower the winch movements.
- 4) The more the joystick is deflected upward or downward, the faster the winch movements become and the slower the derricking movements.
 - 5) Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the neutral or right position to make relevant movements get slower.

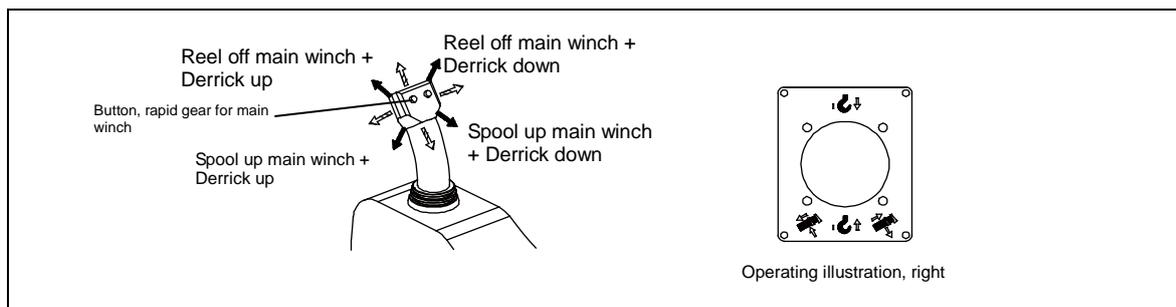


Figure 4-69 Main winch + Derrick

i) Main winch + Telescope

You can telescope the main boom in / out and move the main hook up or down at the same time. For this type of move, it is necessary for the operator to move the right joystick two adjacent directions. For example, to move main hook down and telescope out, push the right joystick up and to the right (1:30 clock position). Refer to Figure 4-70. The other movements on the right joystick are as follows:

Push up and to the left (10:30 clock position) – the boom telescopes in and the main hook moves down.

Pull aft and to the right (4:30 clock position) – the boom telescopes out and the main hook moves up.

Pull aft and to the left (7:30 clock position) – the telescopes in and the main hook moves up.

- 1) Set the switch "Pre-selection of derrick / telescope" to the right position.
- 2) Press and hold button "Rapid gear for main winch" with the "Pre-selection of normal speed / low speed / extremely low speed" to the left position to achieve rapid movements of main winch.
- 3) The more the joystick is deflected leftward or rightward, the faster the telescoping movements become and the slower the winch movements.
- 4) The more the joystick is deflected upward or downward, the faster the winch movements become and the slower the telescoping movements.
- 5) Set the switch "Pre-selection of normal speed / low speed / extremely low speed" to the neutral or right position to make relevant movements get slower.

Note:

When you select the automatic telescoping mode, the right joystick and the switch "Pre-selection of normal speed / low speed / extremely low speed" are invalid.

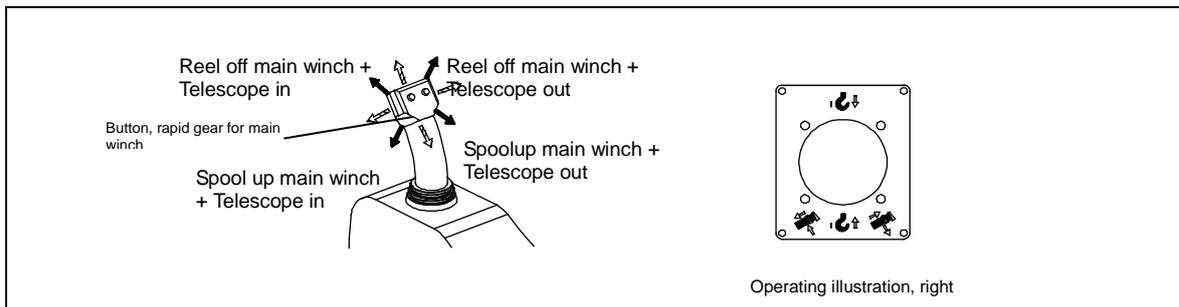


Figure 4-70 Main winch + Telescope

! WARNING

Carry out simultaneous crane movements without taking a load or with a suspended load. Do not telescope the boom with a suspended load.

4.5.7 Rope reeving

Before you start to change the wire rope reevings:

- Support the crane on outriggers.
- Fully retract the boom and move it to the side or rear of the crane.

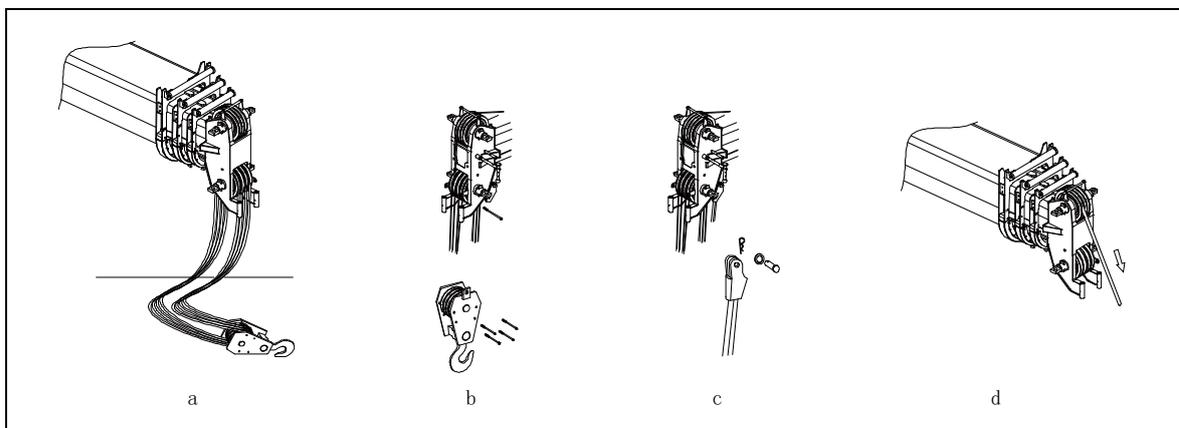


Figure 4-71 Rope reeving

Change the wire rope reevings as follows (Refer to Figure 4-72):

- a) Derrick boom down and put the hook (a) on the ground.
- b) Remove the pins (b) on the hook block and boom head to let the wire rope unreeve.
- c) Remove the hoisting limit switch weight (c).
- d) Remove the wedge and socket assembly (beckett).
- e) Dead end the rope on the hook block for an odd reeving number, and on the boom head for an even reeving number.
- f) Change rope reevings (d).

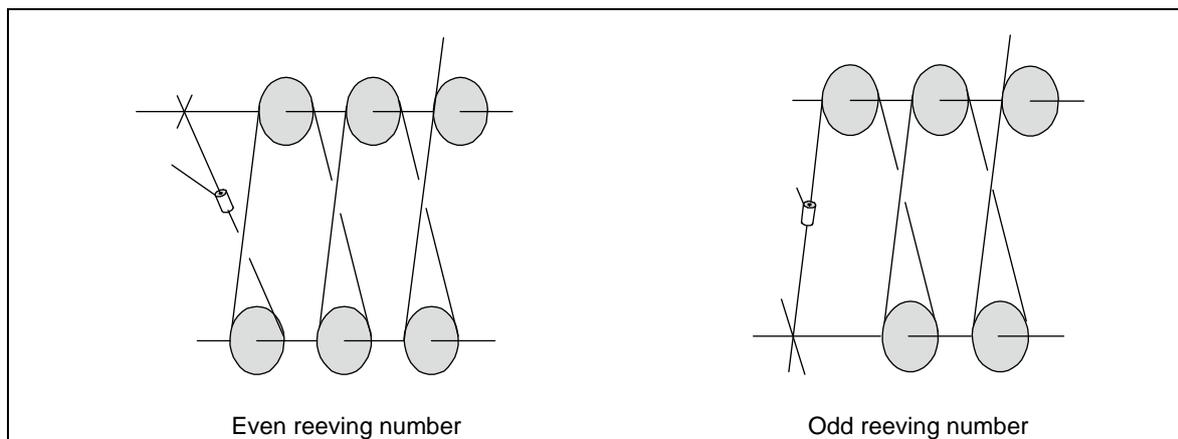


Figure 4-72 Location of hoisting limit switch weight

Note:

- (1) You must change the location of the hoisting limit switch weight if you have a different number of wire rope reevings. Refer to Figure 4-72.
 - (2) Put the wire rope on the winch spool smoothly and in sequence.
- Make sure that you do all of the work on level ground that is hard. The ground must hold more than the load bearing capacity.



When the long boom is reeved with wire rope, it is suggest that select an even reeving number. Do not select an odd reeving number. Otherwise, the boom will bend.

4.5.8 Central lubricating system

The crane superstructure is equipped with central lubricating system. After you switch on the power switch of central lubricating system or ignition starter switch, the greasing pump begins to lubricate the lubricating points at specified intervals.

A lubrication cycle consists of pump running interval and their running time. Once the pump running interval reaches the set value, the pump will start running and time its running. And when its running time reaches the set value, the pump will stop lubricating and time the interval.

The lubricating cycle will repeat as long as the system works.

For the structure of the central lubricating system, refer to Figure 4-73.

For the outside view of the controller, refer to Figure 4-74.

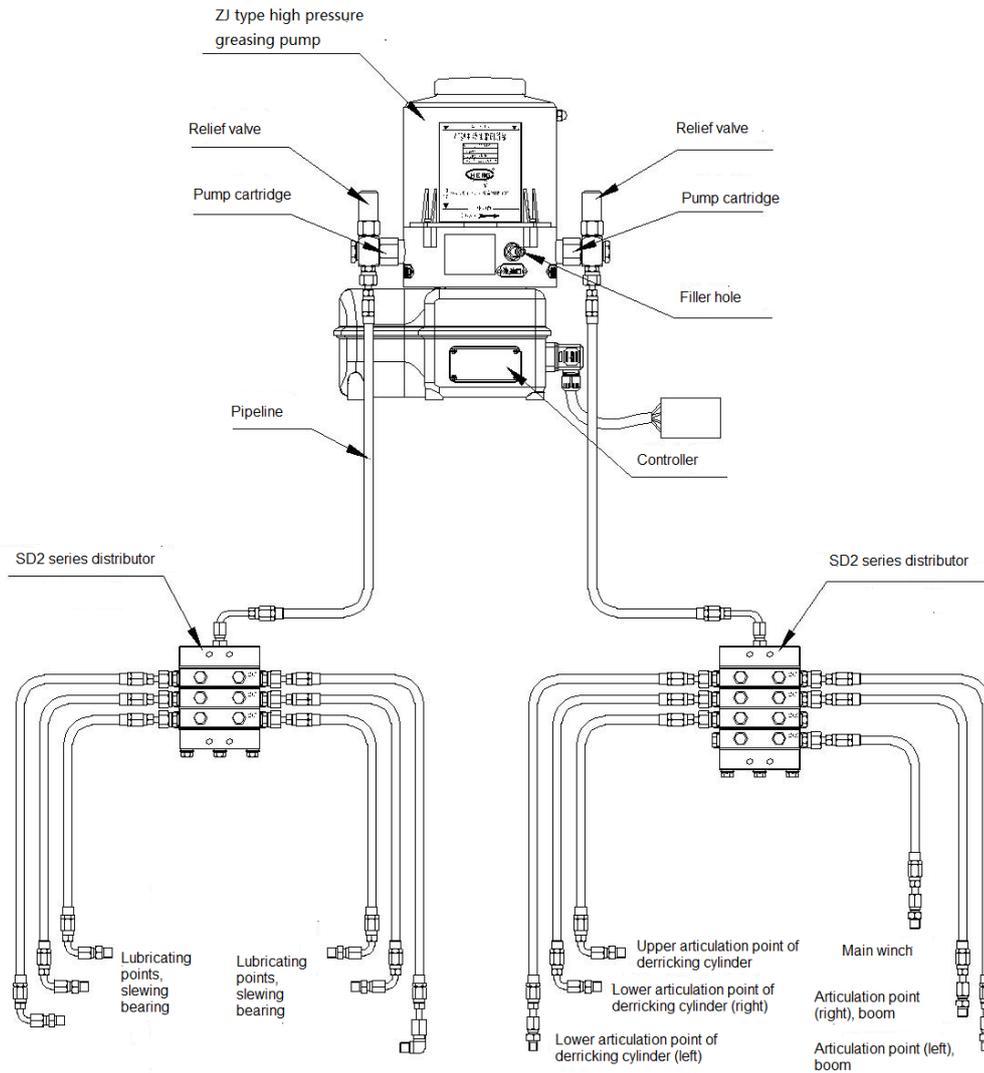


Figure 4-73 Central lubricating system

The running time and running interval of the greasing pump are controlled by the power-on and power-off time of PLC or by the program controller attached with the greasing pump (when the greasing pump attached with the program controller is selected) according to the lubricating requirements of the equipment. The program controller is on the lower part of the greasing pump. For the outside view of the program controller, refer to Figure 4-74.

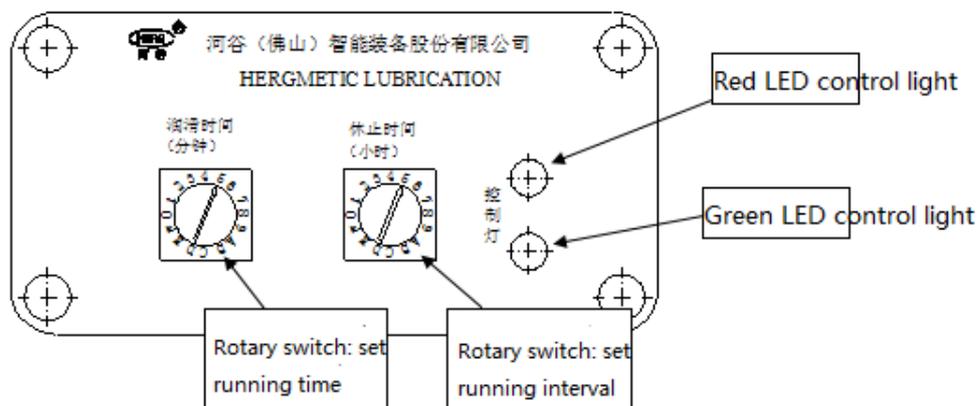


Figure 4-74 Program controller

- (1) The left rotary switch is used to set the running time of the greasing pump. The number and letter pointed by the arrow stands for the time code. There are 16 time codes in total. Min. running time is 1 min. and Max. running time is 16 min. when the program controller is connected to a short circuit plug. See the table below.

Time code	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	0
Running time (min.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

- (2) The right rotary switch is used to set the running interval of the greasing pump. The number and letter pointed by the arrow stands for the time code. There are 16 time codes in total. Min. running interval is half hour and Max. running interval is 8 hours. when the program controller is connected to a short circuit plug. See the table below.

Time code	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	0
Running interval (hr.)	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8

 **CAUTION**

The lubricating cycle of this product has been set when delivery, namely the running time is 5 min. and the running interval is 4 hr. Once the pump running interval reaches 4 hr., the pump will start running and time its running. And when its running time reaches 5 min., the pump will stop lubricating and time the interval. The lubricating cycle will repeat as long as the system works.

The instructions for control lights on the panel are as follows:

1. Running time: the green LED control light illuminates for 1 sec. and then extinguishes for 1 sec.
2. Running interval: the green LED control light stays illuminated.
3. You can activate the manual switch in operator's cab to reset the system under any conditions. After reset, the greasing pump runs right now according to the current state value of the rotary switch.
4. Low level warning: the red LED control light flashes and sounds (the interval time is 0.1 sec.)
5. Electric current warning: the red LED control light stays illuminated and sounds continually.

Note:

The running time of the greasing pump should be adjusted by specialized persons lest the motor is damaged when the water enters due to incorrect installation. If the fault occurs because the user improperly adjusts the system, the user should undertake the responsibility by himself. If the running time is insufficient, activate the bypass key switch (see Chapter 4) in operator's cab to enable the central lubricating system to lubricate.

ZOOMLION

Truck Crane Operator'S Manual

Chapter 5 Equipment



Chapter 5 Equipment

5.1 Safety technical guidelines for assembly

- a) Reeve the hoist rope between the rope pulley on the boom head and hook pulley in accordance with the corresponding reevings specified in lifting capacity tables.
- b) Assemble the counterweight plates according to lifting capacity tables.
- c) If the jib is not in contact with ground during assembly and dismantling, put appropriate and stable materials below the jib.



- (1) **Do the assembly work with suitable aids (scaffolding or lifting platforms, etc.)! If this is not observed, personnel could fall and suffer life-threatening injuries.**
 - (2) **Do not stand beneath the boom especially when the jib is being pinned or unpinned.**
- d) If the lattice components are pushed inside each other for transportation purposes, they each must be secured with two chains.
 - e) Perform the safety measure checks before supporting the crane.
 - f) Before setting-up and taking-down the jib, make sure that the following prerequisites are met:
 - 1) The crane is properly supported and level.
 - 2) The telescopic boom is fully retracted.
 - 3) The jib has been fitted in accordance with lifting capacity tables.
 - 4) All pinned connections have been secured.
 - 5) All limit switches have been correctly fitted and are fully operational.
 - 6) The hoist rope has been correctly reeved through the rope pulleys with the rope securing tubes to prevent it from jumping out.
 - 7) There are no loose parts on the boom and jib.



- (1) **In winter, the boom, jib and associated components (limit switches, cable drums, corner marker light, anemometer etc.) must be kept free of snow and ice.**
- (2) **Incorrectly fitted or faulty limit switches and falling parts (pins, spring-loaded safety pins, ice etc.) can cause injury!**

5.2 Jib

5.2.1 General

The jib is one of the important components of all terrain cranes. It is auxiliary equipment used to increase the crane lifting height. With the jib assembled, the load can be lifted to a higher height and the working radius can be enlarged via offset changed.

This crane is equipped with two-section lattice jib and two extensions (optional) (Refer to Figure 5-1). They connect to boom by pins.

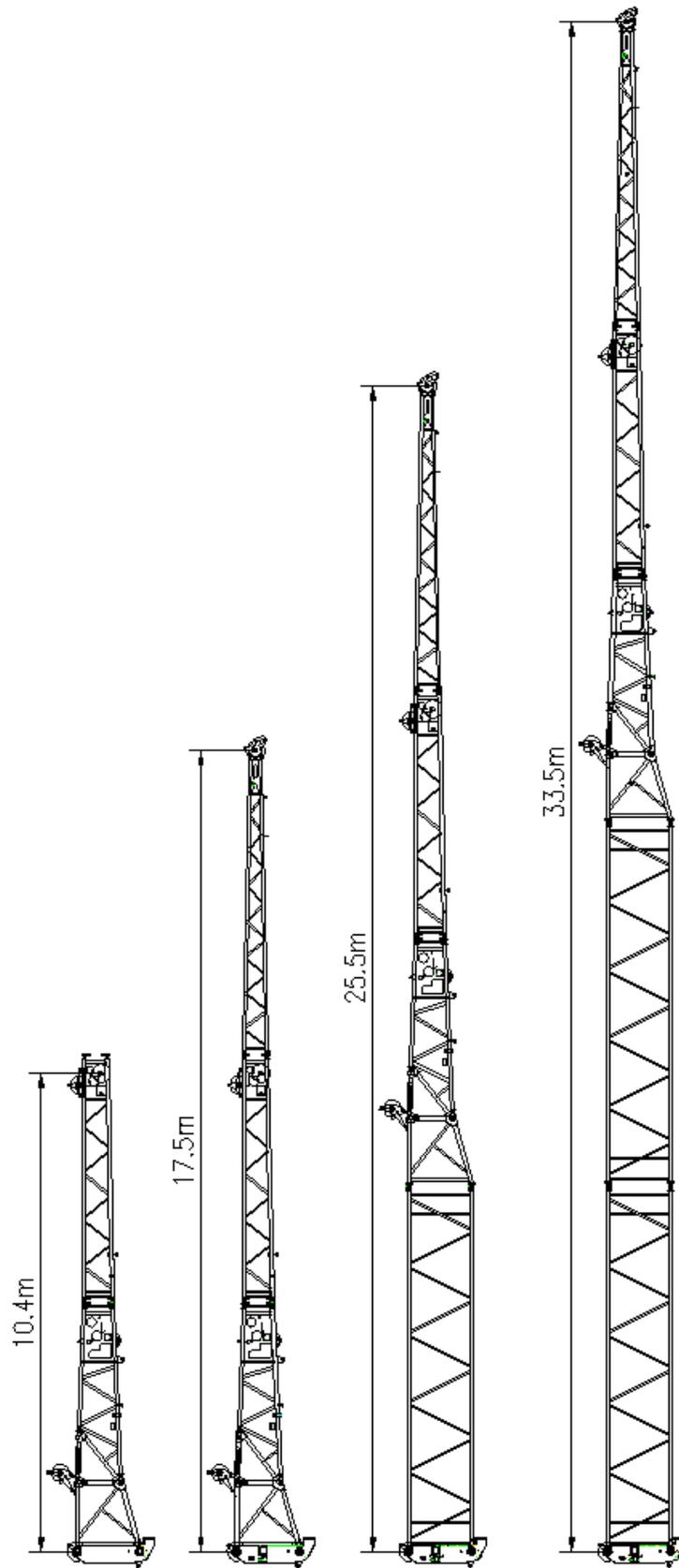


Figure 5-1 Jib variants



You cannot use the jib when you lift a load if the outriggers are not in the correct position.

Before normal driving, the jib will be removed from the complete vehicle.

5.2.2 Assembly

You can assemble the jib at an angle of 0° , 15° or 30° to the telescopic boom according to work requirements.

Assemble the jib (Take 0° offset for example.). Refer to Figures 5-2 to 5-14.

- Extend the outriggers and make the crane level with the support control unit.
- Retract the boom fully.
- Move the boom to the side or rear of the crane and position it to the minimum angle.
- Make sure there is 36 m slewing range to the slewing center.

Refer to Figure 5-2.



Figure 5-2 Jib assembly

- e) Adjust the limit bolt under the main boom head (viewed from travelling direction) till the clearance between the end surface of limit bolt and the baffle at the boom head is between 1 - 2 mm. After that, tighten the locking nut. Refer to Figure 5-3.

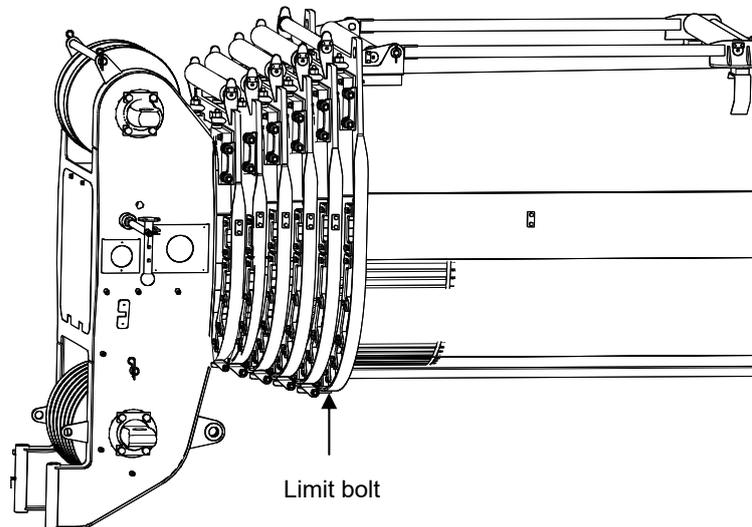


Figure 5-3 Limit bolt adjustment

- f) Remove the pin I. Extend the folded bracket and install the removed pin I. Refer to Figure 5-4.

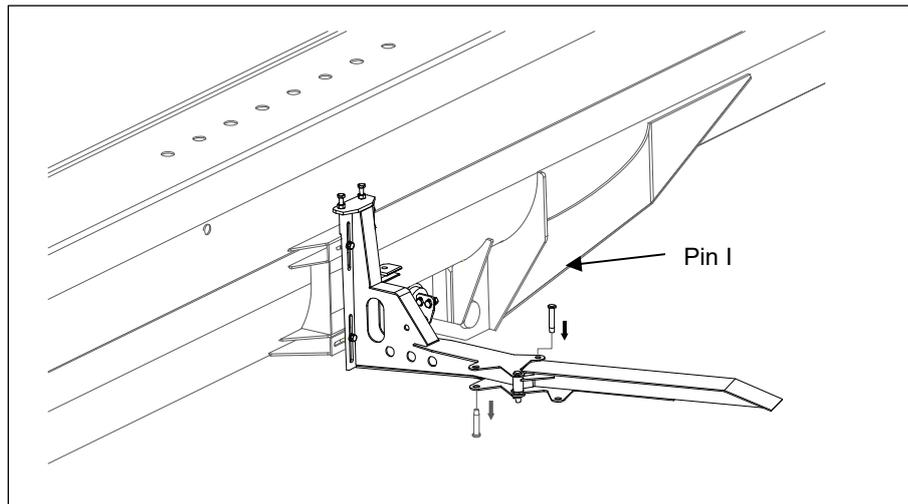


Figure 5-4 Extend the folded bracket

- g) Remove the pin A1 of the tail bracket, the pins A2 and A3 of the intermediate bracket II and the pin A5 of the intermediate bracket I. Refer to Figure 5-5.

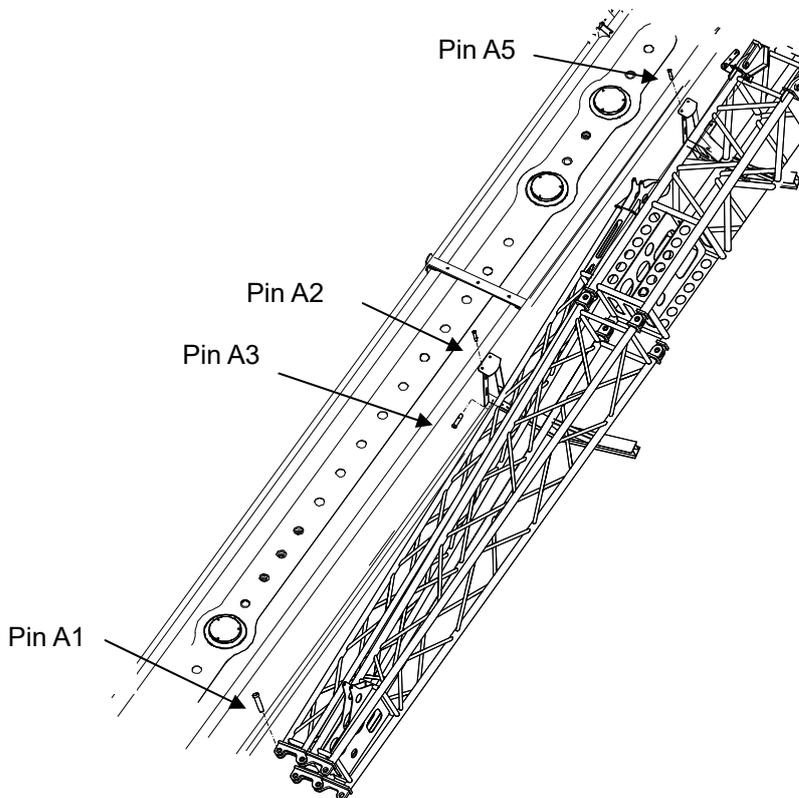


Figure 5-5 Pins A1, A2, A3 and A5 removal

- h) Move the jib to overlap at point A8. Refer to Figure 5-6.

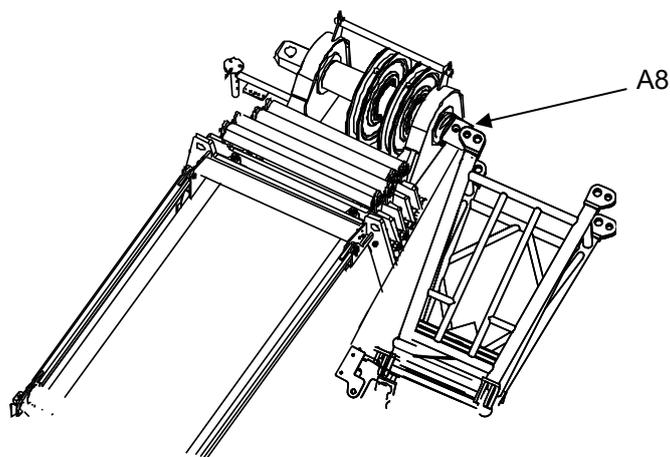


Figure 5-6 Move the jib

- i) Align the end of the jib with the connection points on the right side of the telescopic section VII head. Install the pin A8 and the retaining clip. Refer to Figure 5-7.

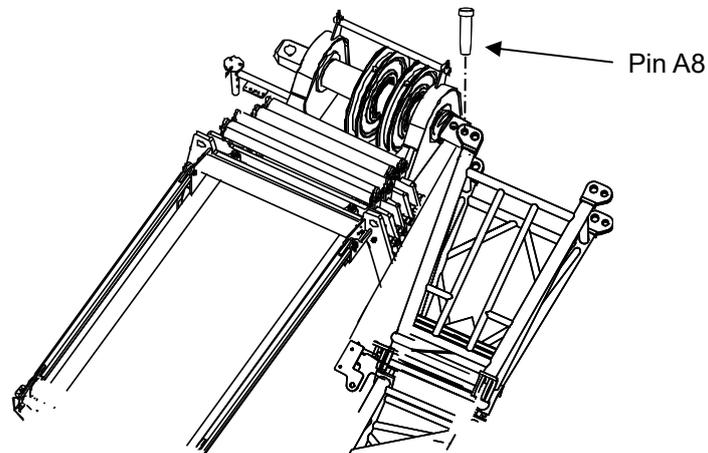


Figure 5-7 Pin A8 installation

- j) Remove the pin A7 of the front bracket. See Figure 5-8. Manually rotate the jib to the pin of main boom to overlap together.

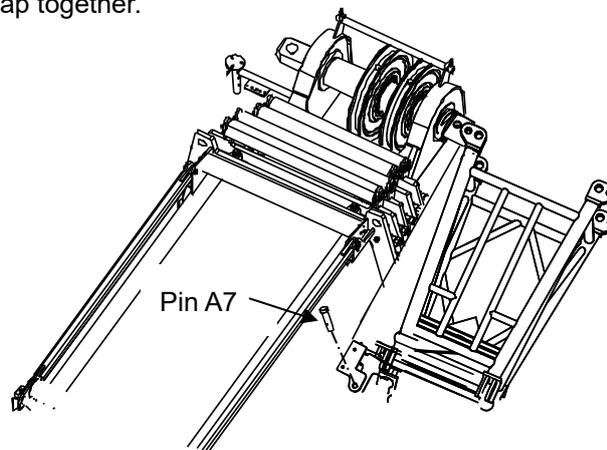


Figure 5-8 Pin A7 of front bracket removal

- k) Align the other end of the jib with the connection points on the left side of the telescopic section VII head. Install the pin A9 and the retaining clip. Refer to Figure 5-9.

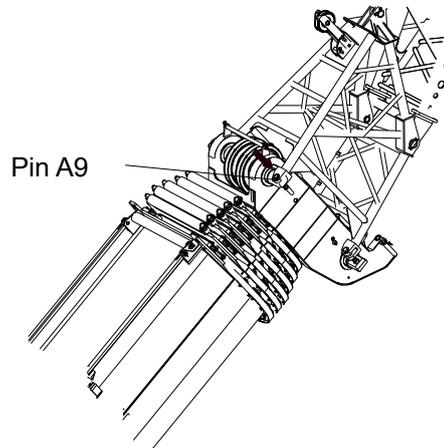


Figure 5-9 Pin A9 installation

- l) Remove the pin A4 and the retaining clips connecting jib section I to section II. Refer to Figure 5-10.

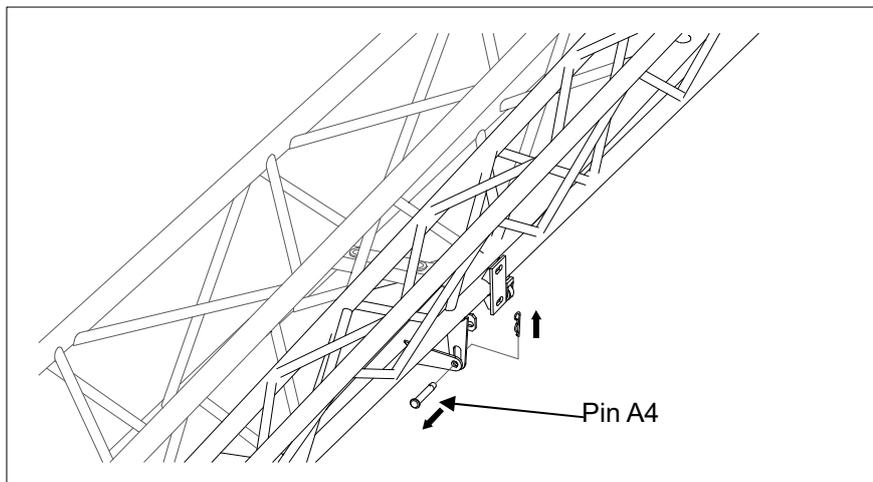


Figure 5-10 Pin A4 removal

- m) The jib section 2 rotates from pin II to the jib section 1 right ahead. Refer to Figure 5-11.

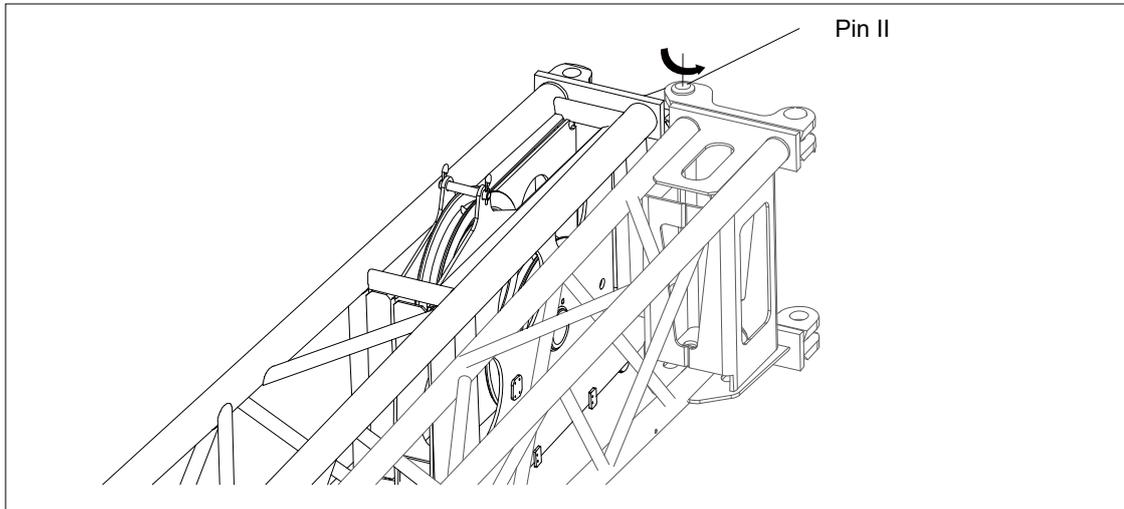


Figure 5-11 Jib section 2 rotation

- n) Align the end of the jib section 2 with the connection points on the left side of the jib section 1 head. Install the pin III and the retaining clip. See Figure 5-12.

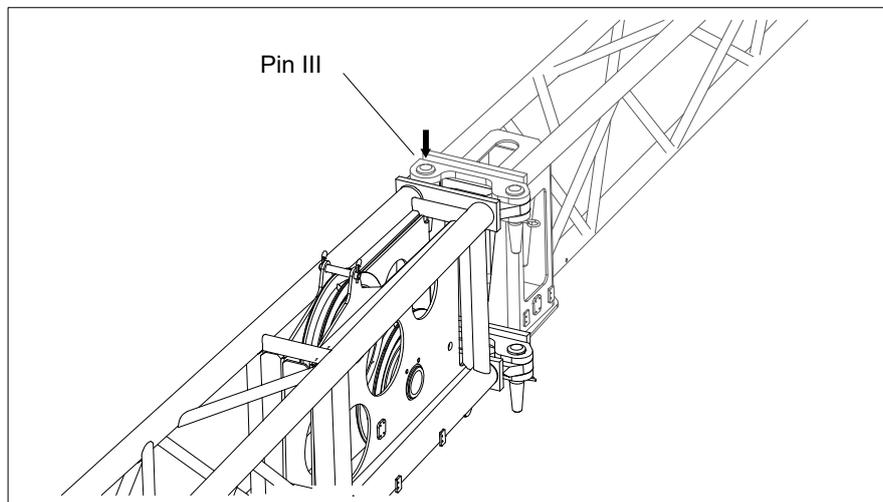


Figure 5-12 Pin III installation

- o) Reeve the wire rope from the auxiliary winch through the end of the jib. Install the auxiliary hook and the hoisting limit switch. Examine them for proper assembly.



Danger of fatal injuries due to falling components!

Do not stand under the boom or jib during assembly.

The jib or other components can fall down due to assembly error.

5.2.3 Angle settings

The jib can be operated in angles of 0° , 15° and 30° . The relevant angle is set using pins on the pull bracket of the adapter II.

Change the jib offset from 0° to 30° (Refer to Figure 5-13.):

- Reel off the auxiliary hoist rope for 2 m to 3 m at low speed by moving the left joystick.
- Remove the pins and retaining clips from the pull bracket of the adapter at the end of jib.
- Derrick the boom up slowly until the long groove of the pull bracket aligns with the pin bores for 30° .
- Install the pins and retaining clips at the point for the 30° position.

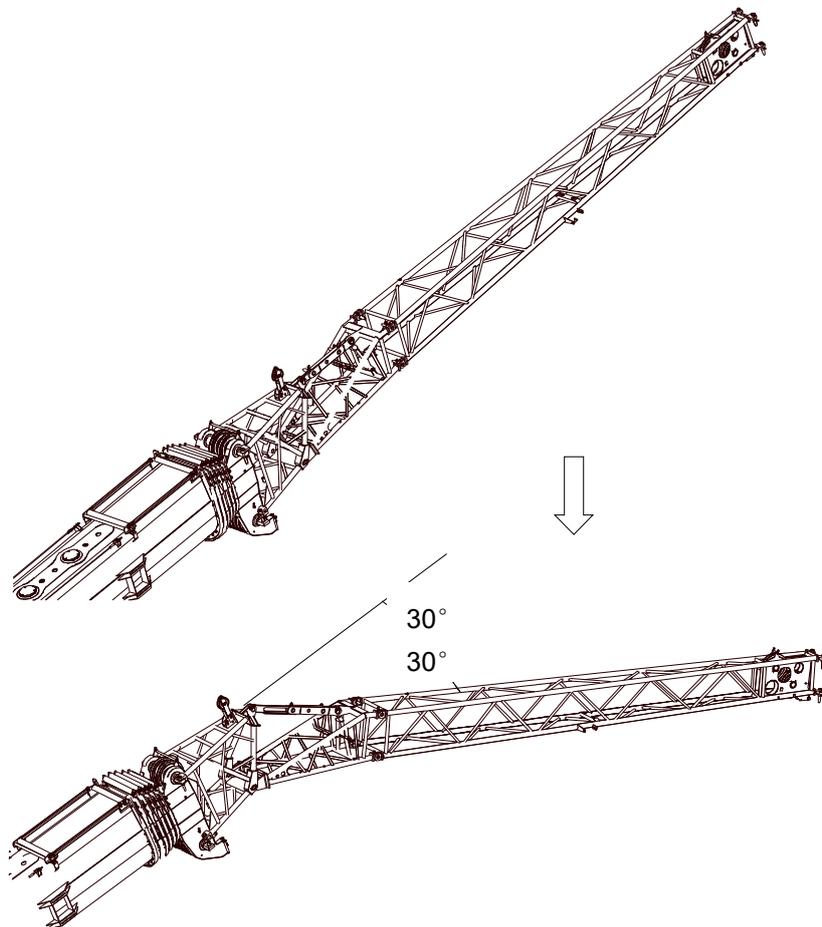


Figure 5-13 Changing the offset to 30°

5.2.4 Disassembly

After you complete the jib operation, dismantle the jib in reverse order of the assemble steps.



Do not excessively spool up the auxiliary winch when you disassemble the jib.

After the assembly and disassembly of jib, adjust the limit bolt under the main boom head (viewed from travelling direction) till the clearance between the end surface of limit bolt and the baffle at the boom head is equal to or more than 5 mm in order to prevent the limit bolt from damaging during boom telescoping.

5.2.5 Reeving in the auxiliary hoist rope

- Reeve the wire rope from the auxiliary winch through the rope guide on the basic boom.
- Reeve the wire rope through rope guide pulleys to the jib section I head pulley or the jib section II head pulley, and then reeve it under the rope securing tubes I and II or the rope securing tubes III and IV.
- Remove the rope securing tube II and its retaining clip.
- Install the wedge and socket assembly.
- Install the auxiliary hook.
- Install the rope securing tube II and retaining clip.

See Figure 5-14.

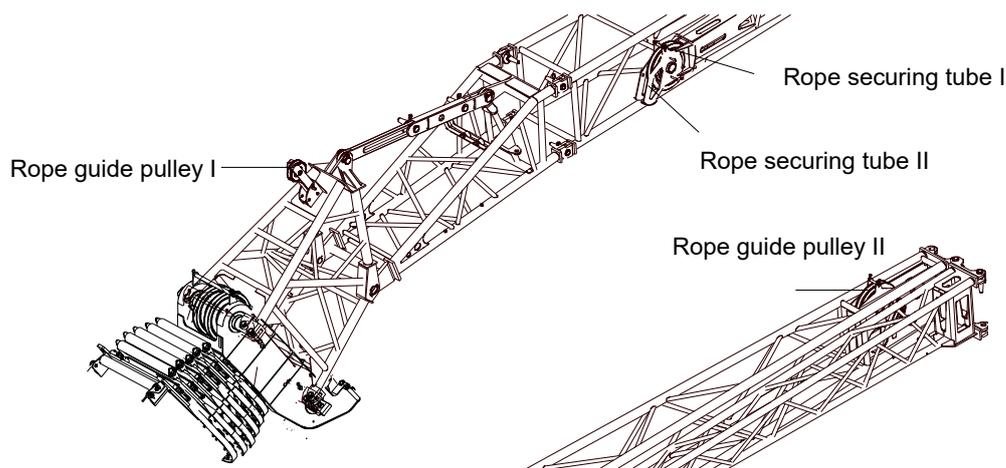


Figure 5-14 Rope securing tubes

5.2.6 Extension

The extension is one of the important structural members of truck cranes. With the extension assembled, the load can be lifted to a higher height and the working radius can be enlarged via offset changed. And the extension should be used with the jib together. Two extensions are available for options. They are connected to the jib by pins. Refer to Figure 5-15.

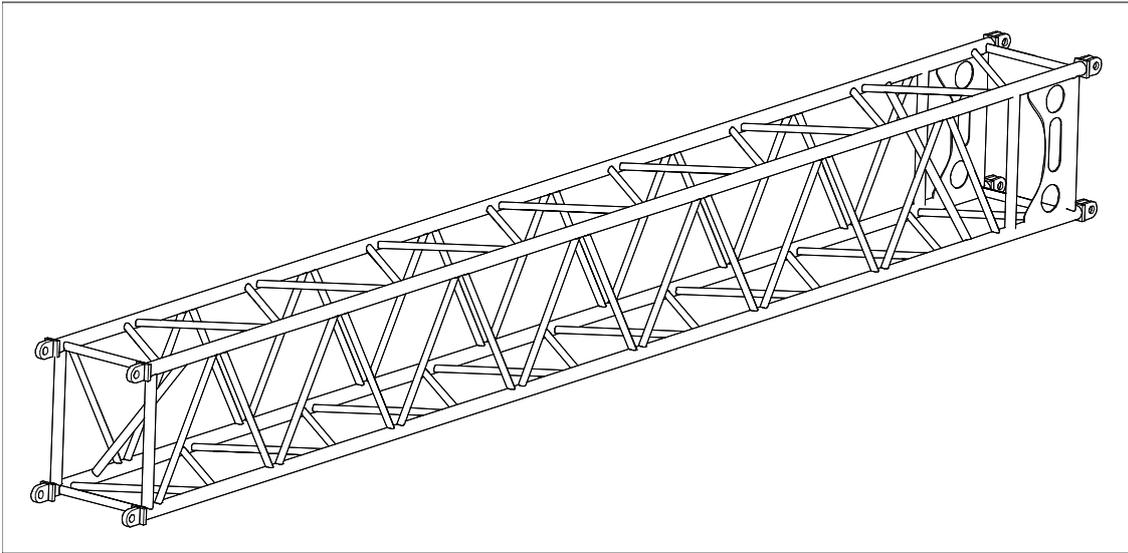


Figure 5-15 Extension

! WARNING

- (1) When using the extension, you must pay attention to the main boom length and the corresponding jib variant according to the lifting capacity tables.
- (2) When using the extension, connect the extension to the top boom section. And connect adapter I to the jib.
- (3) Transport the extension by a special vehicle and assemble it by an auxiliary lifting equipment.

5.2.7 Electrical connection

For electrical connection of jib, please refer to Figure 5-16.

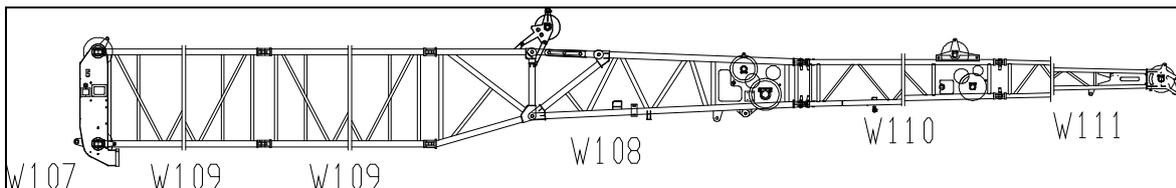


Figure 5-16 Electrical connection of jib



- (1) **Protect the plugs and sockets used for electrical connection with black protective shells against contamination and dust.**
- (2) **Before you disassemble the jib, disconnect the cable harness of the hoisting limiting switch for the auxiliary winch and the cable harness of the jib. Otherwise, the cable harness may be broken!**
- (3) **The main electrical element is the hoisting limit switch for the auxiliary winch.**

5.2.7.1 Jib variant 1 (10.4 m)

- a) Connect one end of the transition cable W107 of the jib to the jib cable connector on the junction box at the main boom head.
- b) Connect one end of the transition cable W107 of the jib to the male end of the cable harness W108 of the adapter.
- c) Connect the female end of the cable harness W108 of the adapter to the male end of the cable harness W110 of the jib section I.
- d) Connect the female end of the cable harness W110 of the jib section I to the connector with the junction box at the jib head.

5.2.7.2 Jib variant 2 (17.5 m)

- a) Connect one end of the transition cable W107 of the jib to the jib cable connector on the junction box at the main boom head.
- b) Connect one end of the transition cable W107 of the jib to the male end of the cable harness W108 of the adapter.
- c) Connect the female end of the cable harness W108 of the adapter to the male end of the cable harness W110 of the jib section I.
- d) Connect the female end of the cable harness W110 of the jib section I to the male end of the cable harness W111 of the jib section II.
- e) Connect the female end of the cable harness W111 of the jib section II to the connector with the junction box at the jib head.

5.2.7.3 Jib variant 3 (25.5 m)

- a) Connect one end of the transition cable W107 of the jib to the jib cable connector on the junction box at the main boom head.
- b) Connect one end of the transition cable W107 of the jib to the male end of the cable harness W109-1 of extension I.
- c) Connect the female end of the cable harness W109-1 of the extension I to the male end of the cable harness W108 of the adapter.

- d) Connect the female end of the cable harness W108 of the adapter to the male end of the cable harness W110 of the jib section I.
- e) Connect the female end of the cable harness W110 of the jib section I to the male end of the cable harness W111 of the jib section II.
- f) Connect the female end of the cable harness W111 of the jib section II to the connector with the junction box at the jib head.

5.2.7.4 Jib variant 4 (33.5 m)

- a) Connect one end of the transition cable W107 of the jib to the jib cable connector on the junction box at the main boom head.
- b) Connect one end of the transition cable W107 of the jib to the male end of the cable harness W109-1 of extension I.
- c) Connect the female end of the cable harness W109-1 of the extension I to the male end of the cable harness W109-2 of the extension II.
- d) Connect the female end of the cable harness W109-2 of the extension II to the male end of the cable harness W108 of the adapter.
- e) Connect the female end of the cable harness W108 of the adapter to the male end of the cable harness W110 of the jib section I.
- f) Connect the female end of the cable harness W110 of the jib section I to the male end of the cable harness W111 of the jib section II.
- g) Connect the female end of the cable harness W111 of the jib section II to the connector with the junction box at the jib head.

5.3 Tip boom

5.3.1 General

The tip boom is one of the important components of truck cranes. With the tip boom assembled, the load can be lifted to a higher height and the working radius can be enlarged. One-section tip boom is available for options. The one-section tip boom connects to boom by pins. The assembly of tip boom is the same as the jib. Refer to Figure 5-17.

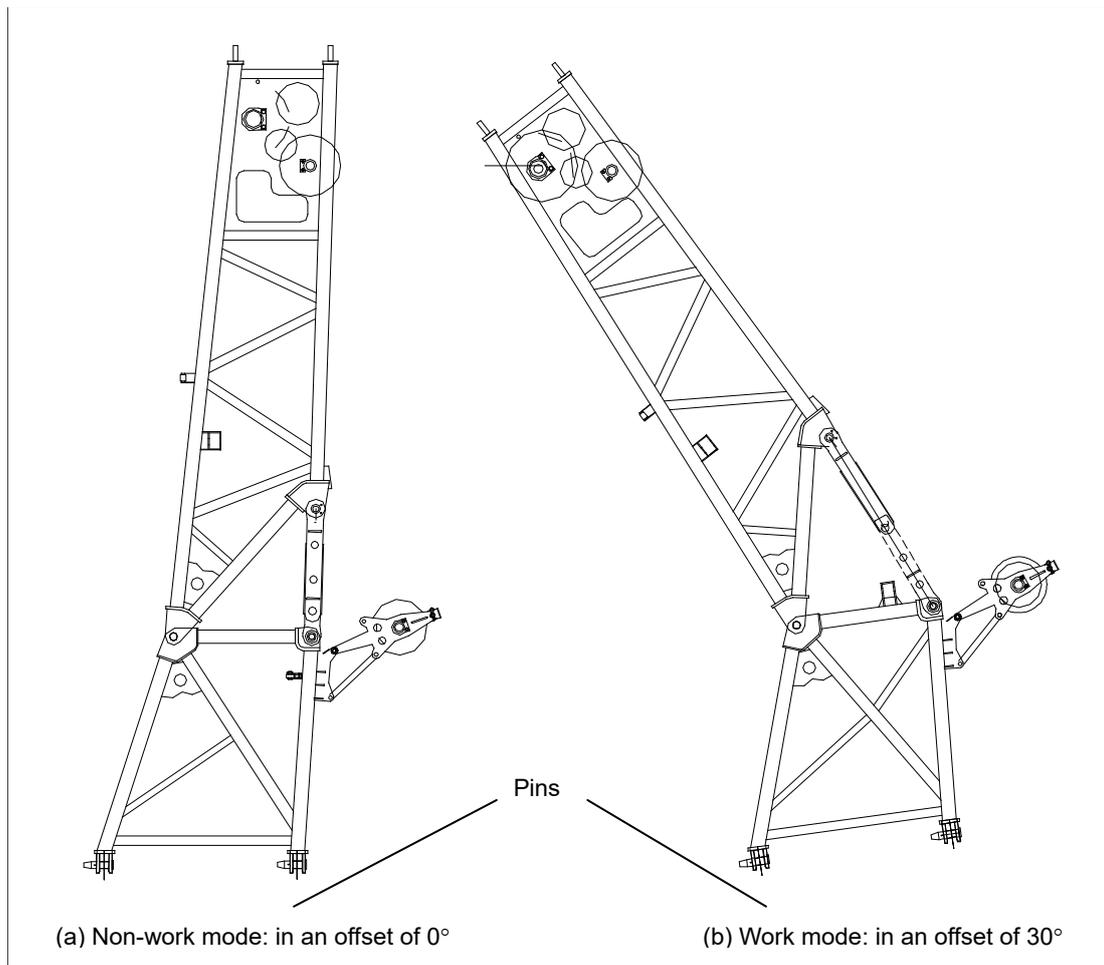


Figure 5-17 Tip boom

WARNING

- (1) You cannot use the tip boom when you lift a load if the crane is not supported on outriggers.
- (2) Set the offset of tip boom to 30° before you begin a lift operation. Set the offset to 0° when the operation does not use the tip boom.

5.3.2 Assembly

The tip boom has two offsets of 0° and 30°. When the operation does not use the tip boom, it is installed on the side of the main boom in an offset of 0°. Before you begin a lift operation, assemble the tip boom in an offset of 30°.

Assemble the tip boom (Take 0° offset for example.).

- a) Extend the outriggers and make the crane level.
- b) Retract the boom fully.
- c) Move the boom to the side or rear of the crane and position it to the minimum angle.
- d) Make sure there is 20 m slewing range to the slewing center.
- e) Do the assembly work according to steps e) – f) in Section 5.2.2.
- f) Remove 4 AO pins connected adapter II to jib section 1. Refer to Figure 5-18.

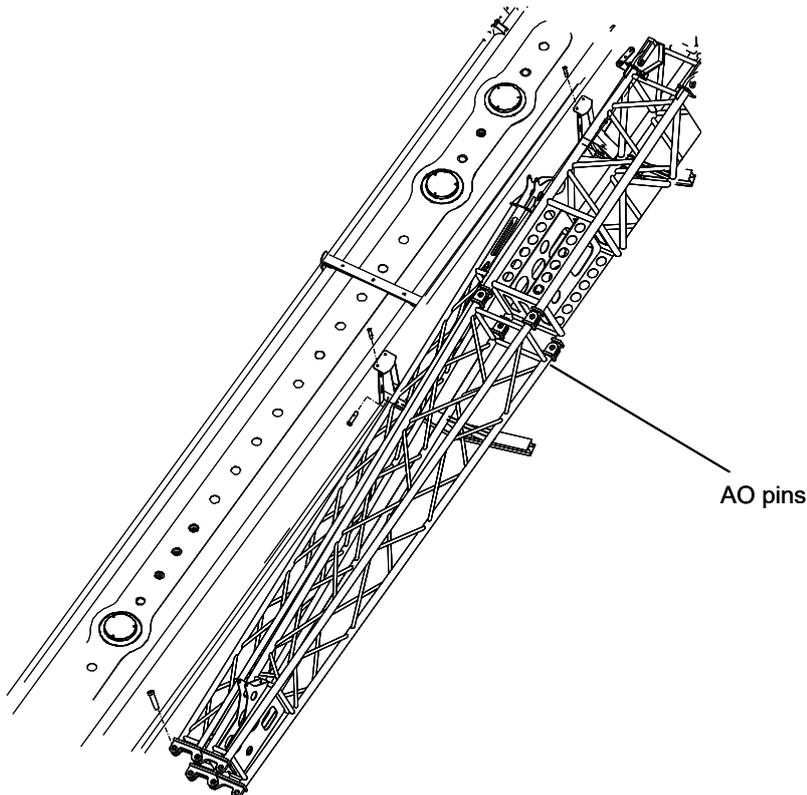


Figure 5-18 Assembly of tip boom

- g) Do the assembly work according to steps h) – q) in Section 5.2.2.



Danger of fatal injuries due to falling components!

Do not stand under the boom or tip boom during assembly.

The tip boom or other components can fall down due to assembly error.

5.3.3 Angle settings

The tip boom can be operated in angles of 0° and 30°. The relevant angle is set using pins. Refer to Figure 5-19.

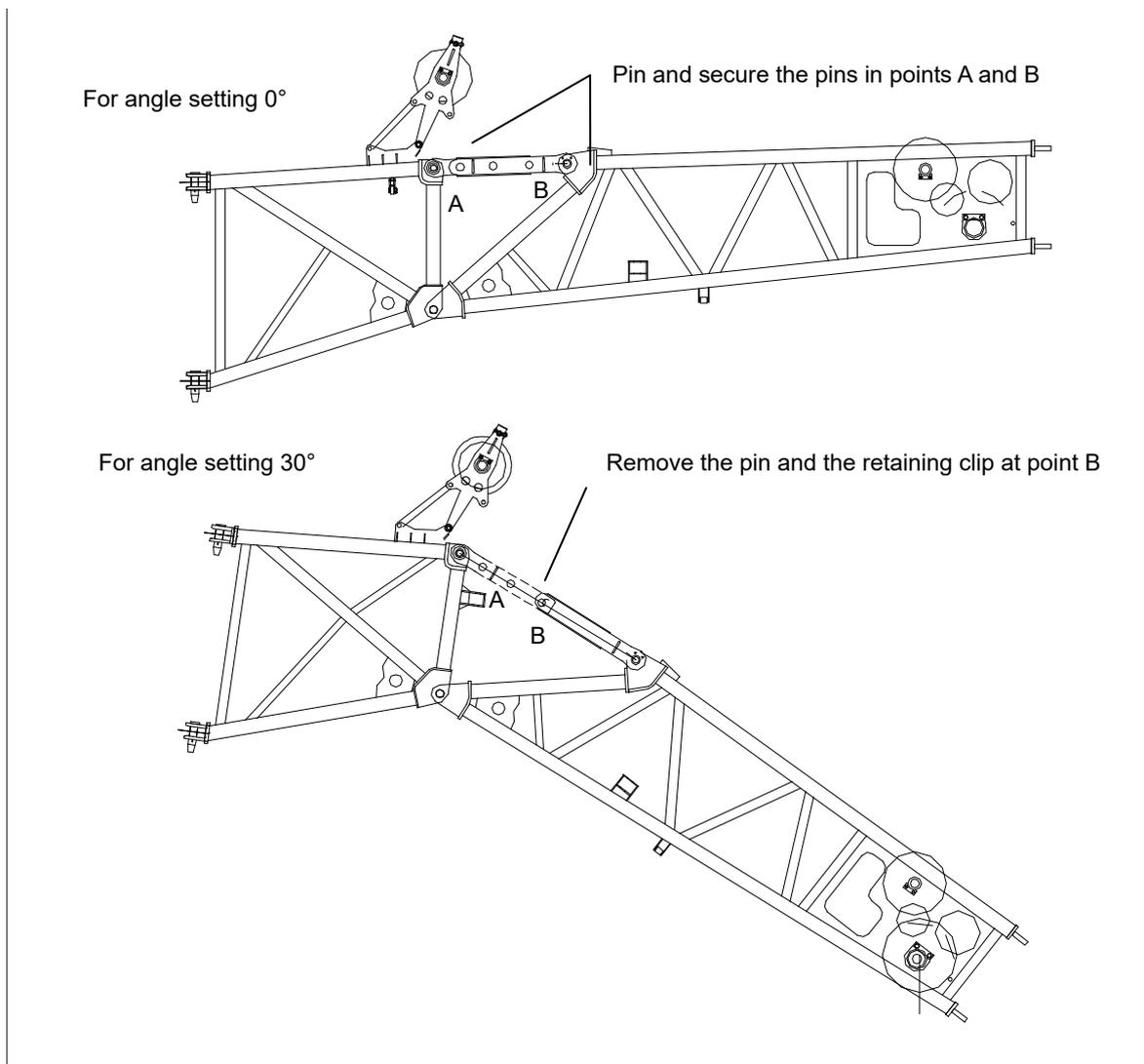


Figure 5-19 Offset positions

Change the offset of tip boom from 0° to 30° (Refer to Figure 5-19.):

- Reel off the auxiliary hoist rope for 2 m to 3 m by moving the joystick.
- Derrick boom down to the minimum angle until the tip boom comes into contact with the ground or is properly supported.
- Remove the pin and the retaining clip at point B.
- Derrick boom up slowly until the pull bracket touches the appropriate pin and the offset is changed to 30°.

5.3.4 Disassembly

After you complete the tip boom operation, dismantle the tip boom in reverse order of the assemble steps. Refer to Section 5.2.4.

5.3.5 Reeving in the hoist rope

- a) Reeve the hoist rope from the main winch or auxiliary winch and pull it at rope guide pulley bracket on the adapter.
- b) Remove the rope securing tubes.
- c) Reeve the hoist rope through the rope guide pulley bracket.
- d) Install the rope securing tubes.
- e) Guide the hoist rope to pulley on the top of tip boom.
- f) Remove the rope securing tubes.
- g) Reeve the hoist rope through the pulley on the tip boom head and the hook pulley.
- h) Install the rope securing tubes.
- i) Connect the wedge and socket assembly to the mounting plate on the lower part of the tip boom head.

Refer to Figure 5-20.



Figure 5-20 Reeving in the hoist rope for tip boom

! CAUTION

It is recommended to use the hoist rope on the main winch for the tip boom. When you use the hoist rope on the auxiliary winch, make sure that the rope is long enough.

5.3.6 Electrical connection

For electrical connection of tip boom, please refer to Figure 5-21.

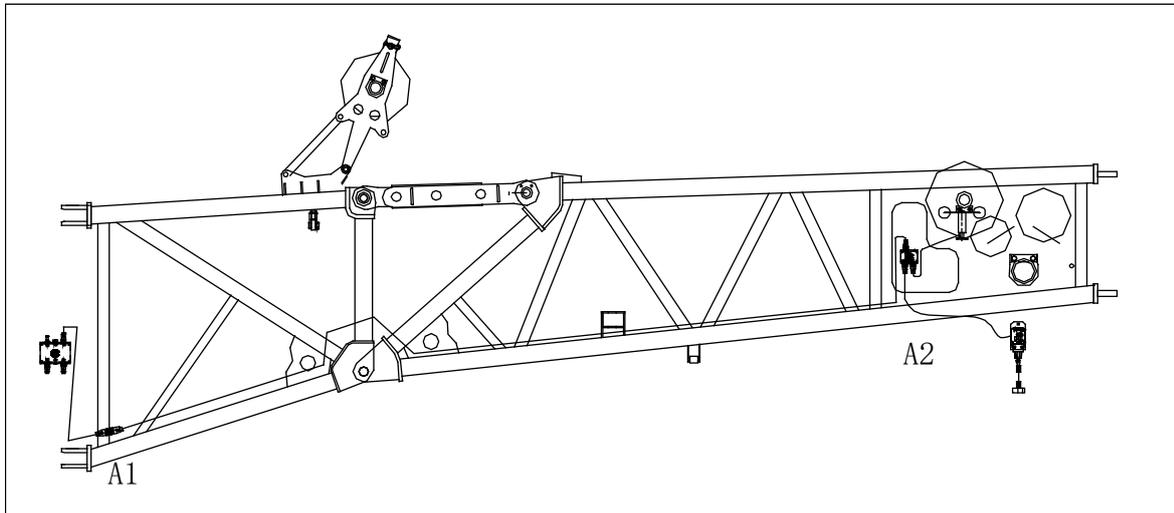


Figure 5-21 Electrical connection of tip boom

CAUTION

- (1) Protect the plugs and sockets used for electrical connection with black protective shell against contamination and dust.
- (2) Before you disassemble the tip boom, disconnect the cable harness of the hoisting limiting switch for the tip boom and the cable harness of the tip boom. Otherwise, the cable harness may be broken!
- (3) The main electrical element is the hoisting limit switch for the winch.
 - a) Connect the terminal A1 of the cable harness on the adapter to the cable harness plugging element on the hoisting limit switch (for main / auxiliary winch) of the terminal box on the main boom head.
 - b) Connect the terminal A2 of the cable harness on the tip boom to the plugging element on the hoisting limit switch for main / auxiliary winch.

5.4 Rooster sheave

The components of the rooster sheave are as follows:

- Bracket
- Sheave spindle
- Sheave
- Pins.

When it is not necessary to use the rooster sheave, make sure that it is attached to the side of the boom.

When the crane is to lift a light load, use the rooster sheave. This is the most efficient way to move a lighter object.

5.4.1 Assembly

- a) Fully retract the boom.
- b) Move the boom to the side or rear of the crane and position it to the minimum angle.
- c) Remove the securing pin and move the bracket to the front of the boom. Align the connection points. Install the connecting pin. Refer to Figure 5-22.
- d) Reeve auxiliary hoist rope through the rooster sheave. Install the auxiliary hook and the hoisting limit switch. Make sure that all connections are tight.

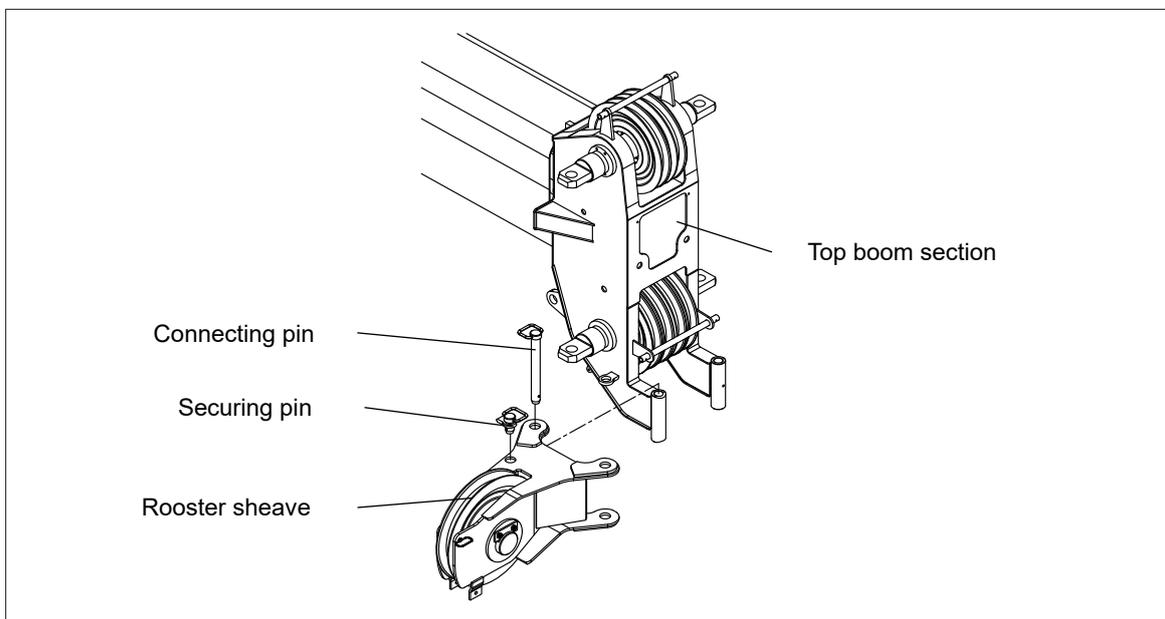


Figure 5-22 Assembly of rooster sheave

5.4.2 Disassembly

When it is not necessary to use the rooster sheave, remove and store it in a safe place. Disassemble it in the reverse order of the assemble procedure.



Under this OM, the electric element which needs to be connected is a hoisting limit detection device of the winch.

- a) Connect the cable harness plugging element of the hoisting limit switch (for auxiliary winch) of the terminal box on the main boom head to the plugging element of hoisting limit detection device of the winch.

5.5 Counterweight

5.5.1 Counterweight and counterweight handler

The components of the crane counterweight are as follows (Refer to Figure 5-23):

- Lower counterweight plate
- Intermediate counterweight plate
- Upper counterweight plate
- Additional ballasts.

Total weight: 64 tons

For counterweight components, refer to Figure 5-23.

For the descriptions of the counterweight components, refer to Table 5-2.

There are six counterweight combinations available. Refer to Table 5-3.

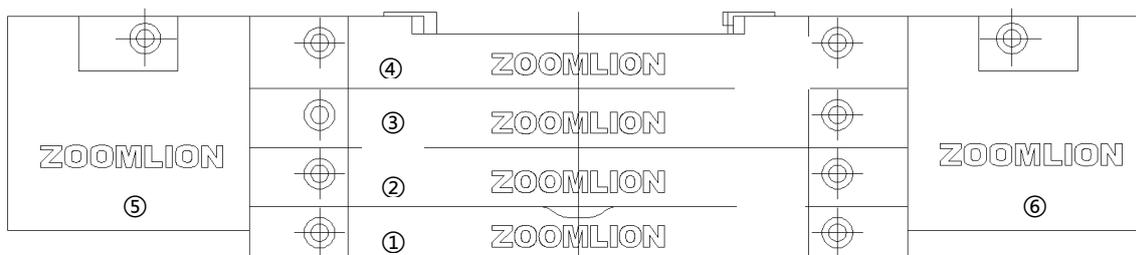


Figure 5-23 Counterweight

Table 5-2 Counterweight components

Pos.	Description	Pos.	Description
①	Lower counterweight plate (12t)	④	Upper counterweight plate (10t)
②	Intermediate counterweight plate (10t)	⑤	Additional ballast (11t)
③	Intermediate counterweight plate (10t)	⑥	Additional ballast (11t)

Table 5-3 Counterweight combinations

Counterweight combinations	④	②	③	④	⑤	⑥
	12t	10t	10t	10t	11t	11t
0t						
12t	√					
22t	√	√				
32t	√	√	√			
42t	√	√	√	√		
64t	√	√	√	√	√	√

The components of the counterweight handler are as follows:

- Counterweight lifting cylinders (left and right)
- Counterweight and other auxiliary elements.

Refer to Figure 5-24.

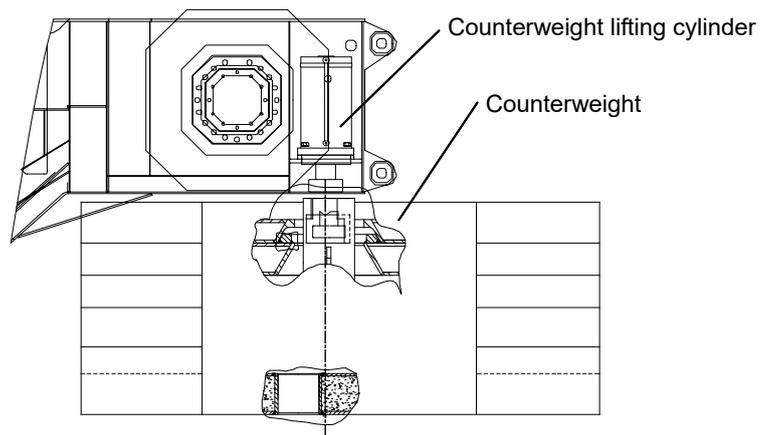


Figure 5-24 Counterweight handler



Risk of accident from toppling of the crane!

Attach counterweights in accordance with the information in the lifting capacity tables.

Otherwise, the crane topples over.

5.5.2 Assembly

Make sure that the following prerequisites are fulfilled:

- The crane is properly supported and horizontally aligned.
- The counterweight lifting cylinders are fully retracted.
- There is no personnel and equipment within the slewing radius.
- The slings have sufficient strength.

Assembly process:

- a) Attach counterweight plate 1 on the centering cones of storage frame on the chassis frame using the crane itself.
- b) Deposit the required counterweight plates on the counterweight plate 1.
- c) Turn the switch “Pre-selection of counterweight remote control box / remote controller”



to the left position on the instrument console of operator's cab. For the position of the switch, refer to Figure 4-3 in Chapter 4.

- d) The counterweight remote control box is operational. Refer to Figure 5-25.

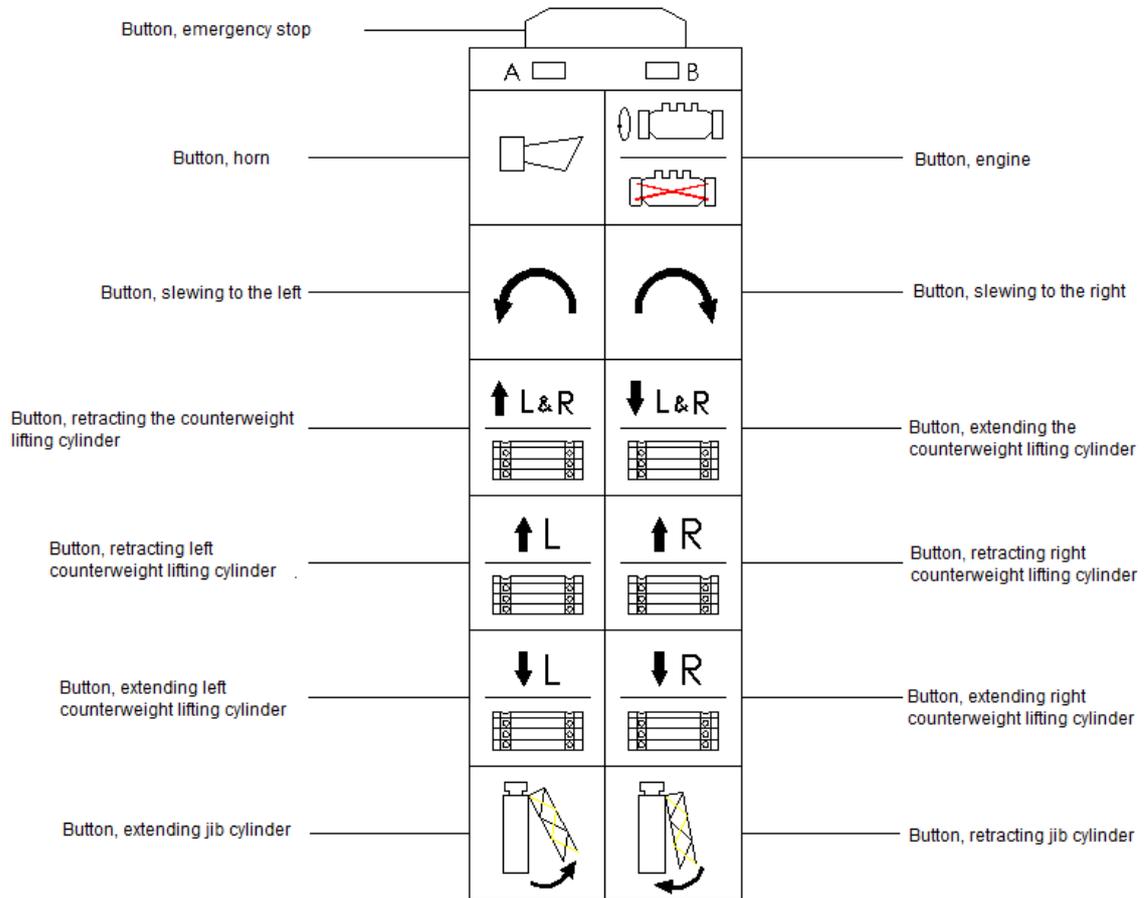


Figure 5-25 Counterweight remote controller

5.5.2.1 Counterweight remote controller

5.5.2.1.1 Detailed information about the counterweight remote controller

- a) Button, emergency stop

Pressed:

Cut off the output of remote controller power supply to ensure safe operation of the crane in the event of a clear emergency.

Turned in the arrow direction:

Release the button. The counterweight remote control controller is operational.

- b) Button, horn

Pressed:

Control light A flashes and turns green. The counterweight remote control controller is operational.

- c) Button, engine

Pressed:

The engine starts before the vehicle starts off.

If you press this button after the engine has started, the engine will stop.

- d) The functions of other buttons are illustrated in Figure 5-25.

5.5.2.1.2 Operating instructions

- a) Slew the slewing table clockwise.

Result:

The counterweight lifting cylinders are near the cylinder mounting slots.

- b) Operate the counterweight remote controller to fully extend the counterweight lifting cylinders.
- c) Continue to turn the slewing table clockwise.

Result:

The counterweight lifting cylinders are stuck into the cylinder mounting slots.

- d) Retract counterweight lifting cylinders until the counterweight plates are lifted to proper position.



The movable counterweights should be transported by a special trailer. Otherwise, the components such as the axles etc. will be seriously damaged due to overload.

ZOOMLION

Truck Crane Operator'S Manual

Chapter 6 Additional Equipment



Chapter 6 Additional Equipment

6.1 Air conditioning in driver's cab

The A/C control panel is on the center console in the driver's cab. For detailed operating instructions, please refer to Chapter 3.

6.2 Air conditioning in operator's cab

In order to provide a comfortable operating environment for the operator, the operator's cab of our crane is equipped with the air conditioning and cab heater. Operate the A/C control panel behind the auxiliary operating panel to adjust the room temperature.

The control panel is behind the auxiliary control switch panel in the operator's cab. There are three rotary switches on it. Refer to Figure 6-1.

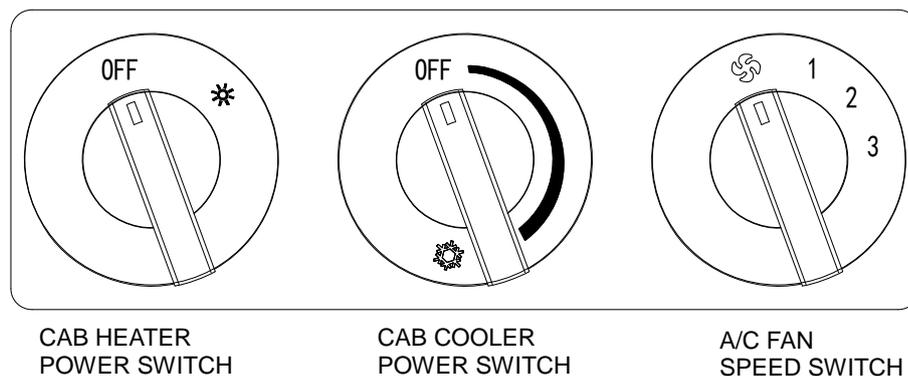


Figure 6-1 A/C control panel

6.2.1 Air conditioning

Do the items that follow.

- Turn the A/C FAN SPEED SWITCH to position "1", "2" or "3".
- Clockwise turn the A/C FAN SPEED SWITCH to increase the refrigerating capacity. A/C starts to refrigerate and the room temperature in the cab begins to drop.

6.2.1.1 Operating instructions

- Refrigeration mode
 - Set the A/C FAN SPEED SWITCH to position "3".
 - After 5 minutes, clockwise set the CAB COOLER POWER SWITCH to any position towards snowflake marking.

Result:

The refrigeration mode is ON.

- b) Set the CAB COOLER POWER SWITCH to position "OFF" when you get necessary temperature.

Result:

The compressor stops work.

When the temperature in the cab is higher than the set value:

- The compressor starts automatically.
- The cooling system begins to work.

You can adjust the angle of the air outlet to change the direction of the cold wind. And you can use the A/C FAN SPEED SWITCH to control the evaporator fan speed: 1, 2 and 3.

When the air conditioning is used, do not turn the CAB COOLER POWER SWITCH to position "SNOWFLAKE" while the A/C FAN SPEED SWITCH is at "LOW" position.

Otherwise, the evaporator may get frost to impair the cooling effect.

 **CAUTION**

- (1) Do not disassemble an A/C system without consent from the A/C manufacturer.
- (2) You must clean the condenser at regular intervals.
- (3) You must use the same type of refrigerant and compressor oil when you replace the parts.
- (4) You must use the same type of refrigerant when you add or replace the refrigerant.
- (5) Set the FAN mode to HI when you first start to cool the cab. Set the FAN mode to MID or LOW when you keep the appropriate cab temperature.
- (6) Do not use the parts to repair the A/C system that are not approved by the manufacturer.
- (7) When you use the A/C function where it is cool and has a high level of humidity, examine the evaporator at a regular interval. In these conditions, the evaporator freezes and causes a blockage for the air that goes through it.
- (8) If you operate the crane in a cold area or in the winter season, set the A/C system to ON for 10 minutes each month.

6.2.1.2 Requirements for periodic maintenance

Table 6-1 Requirements for periodic maintenance

Item	Maintenance	Repair interval
Condenser fan motor	Examine and repair.	Every quarter
Evaporator fan motor	Examine and repair.	Every quarter
Condenser	Examine and clean.	Every month or increase the maintenance frequency according to the working conditions
Evaporator	Examine and clean.	Every quarter or increase the maintenance frequency according to the working conditions
Connector	Make sure that the connector is set in place.	Every month

CAUTION

- (1) **Evaporator – air outlet in the cab**
- (2) **Condenser – the device is used for the exchange of the hot air outside the driver's cab. In some vehicles, it is mounted between water tank and fan (without the condenser fan motor). While in others, it is on the side of the vehicle (with the condenser fan motor).**
- (3) **Condenser fan motor – it is mounted with the condenser to help the hot air exchange.**

6.2.2 Cab heater

Do the items that follow.

- a) Turn the A/C FAN SPEED SWITCH to position "1", "2" or "3".
- b) Turn the CAB HEATER POWER SWITCH from position "OFF" to position "SUN".

The heater system starts to work and the room temperature in the cab begins to rise.

Refer to Figure 6-1.

6.2.2.1 Operating conditions

- a) Ambient temperature $\geq -40^{\circ}\text{C}$, height above sea level ≤ 3000 m.
- b) It cannot be immersed into water and be washed with water directly.
- c) The cab heater should use the antifreeze or the diesel oil that is suitable for the ambient temperature.

WARNING

Do not use gasoline.

6.2.2.2 Fuel and antifreeze selection

- a) For the fuel selection, please refer to Table 6-2.

Table 6-2 Fuel selection

Ambient temperature	Above 5°C	Above -5°C	Above -15°C	Above -30°C	Above -40°C
Fuel	0# diesel oil	10# diesel oil	20# diesel oil	35# diesel oil	50# diesel oil

- b) For the selection of the antifreeze fluid, please refer to Table 6-3.

Table 6-3 Antifreeze selection

Ambient temperature	Above -25°C	Above -40°C
Antifreeze	-25°C antifreeze	-40°C antifreeze

6.2.2.3 Operating instructions

- a) Turn the CAB HEATER POWER SWITCH to position "SUN".

Result:

FAN POWER CONTROL LIGHT on the auxiliary control switch panel is ON.

The cab heater starts to work.

- b) Clockwise turn the A/C FAN SPEED SWITCH.

Result:

The warm air blows out.

- c) When the water temperature reaches 80°C.

The cab heater stops work automatically and the control light "Cab heater state" extinguishes.

- d) When the water temperature is lower than 65°C.

The cab heater starts again.

In this way, the process is repeated in circles.

When the cab heater is used in cold season for the first time, examine the items below:

- There is no blockage in the air passage.
- The cab heater operates smoothly.
- There is no dirt in combustion air inlet and exhaust outlet.

When the cab heater is not used, press the CAB HEATER POWER SWITCH in OFF position to stop the heater. At the same time, the control light "Cab heater state" extinguishes after 3 minutes.

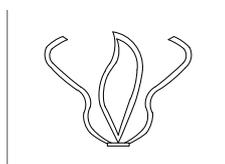


Figure 6-2 Control light "Cab heater state"

NOTICE

Turn off the cab heater only after the control light "Cab heater state" extinguishes. Otherwise, the cab heater will be defective due to heat dissipation failure.

6.2.2.4 Troubleshooting for common failures

Table 6-4 Troubleshooting for common failures

Problems	Causes	Remedy
No warm air blows out.	The A/C FAN SPEED SWITCH on the air conditioning control panel is not turned on.	Turn on the A/C FAN SPEED SWITCH on the air conditioning control panel.
The cab heater does not stop working within 60 seconds after the fuel supply is cut off.	The solenoid valve is dirty or cannot be closed completely, or the flame detector is short-circuited.	Clean oil pipe and examine the connection, the control box and the flame detector.
The power is unstable.	The wave of power supply is big and unstable.	Examine whether the power supply is stable (especially when the stabilized power supply is applied), or replace control panel.
The voltage is high.	The voltage of cab heater is higher than 32 V for 5 seconds (for the cab heater whose rated voltage is 12 V, it means that the voltage is higher than 16 V).	Examine voltage. If the voltage is high, examine voltage regulator of the engine. If it is not high, replace the control box.
The voltage is low.	The voltage of cab heater is lower than 20 V for 5 seconds (for the cab heater whose rated voltage is 12 V, it means that the voltage is lower than 10 V)	Start the engine and cab heater, and then examine the generator and line voltage. If the voltage is not low, replace control panel.
The flame detector is short-circuited.	When the cab heater does not work, the flame detector still shows working state.	Examine whether the line is short-circuited, replace flame detector or control panel.

Problems	Causes	Remedy
When the relay of motor is switched off, it is still electrified.	The contact point is connected, or the control switch is defective.	Replace control panel.
The solenoid valve relay is still electrified when it is switched off or the solenoid valve coil breaks off.	The contact point is connected or the coil breaks off, or the control panel is defective.	Replace control panel or its coil.
The fuse breaks off.	The fuse breaks off, the wire is disconnected, or the control panel is defective.	Reset the fuse, examine connection or replace control panel.
When the relay of solenoid valve is electrified, it cannot output signals.	The control panel is damaged.	Replace control panel.
When the motor relay is electrified, it cannot output signals.	The relay or control panel is defective.	Replace control panel.
The motor cannot work.	The main motor cannot work after it is electrified or the rotational speed is low.	Examine motor connection. Pull out plug to examine the motor, if it cannot work or the rotational speed is low, replace motor. Otherwise, replace the control panel.
The water temperature sensor is short-circuited.	There is water in sensor or the circuit board is wet.	Replace sensor or control box.
Circuit of the water temperature sensor breaks.	The sensor line breaks off or the circuit board fails.	Replace sensor or control box.
The flame detector cannot be ignited.	The flame detector does not output flame signal.	Examine connection of flame detector, replace the detector or control panel.
Flame extinguishes during burning.	Flame extinguishes during burning and cannot burn again.	If the oil tank is short of oil, add oil. If the oil pipe leaks, tighten or replace it. Replace short-circuited flame detector and control box.

Problems	Causes	Remedy
Strong interference	Other interferences	Close other interference source, replace control panel.
The ignition plug breaks.	The ignition plug burn out or the line looses.	Fasten connection, replace ignition plug.
The ignition plug is short-circuited.	It is short-circuited.	Examine it.
The ignition plug relay has no output signal.	The relay or the control panel is defective.	Replace control panel.

6.3 Remote controller (optional)

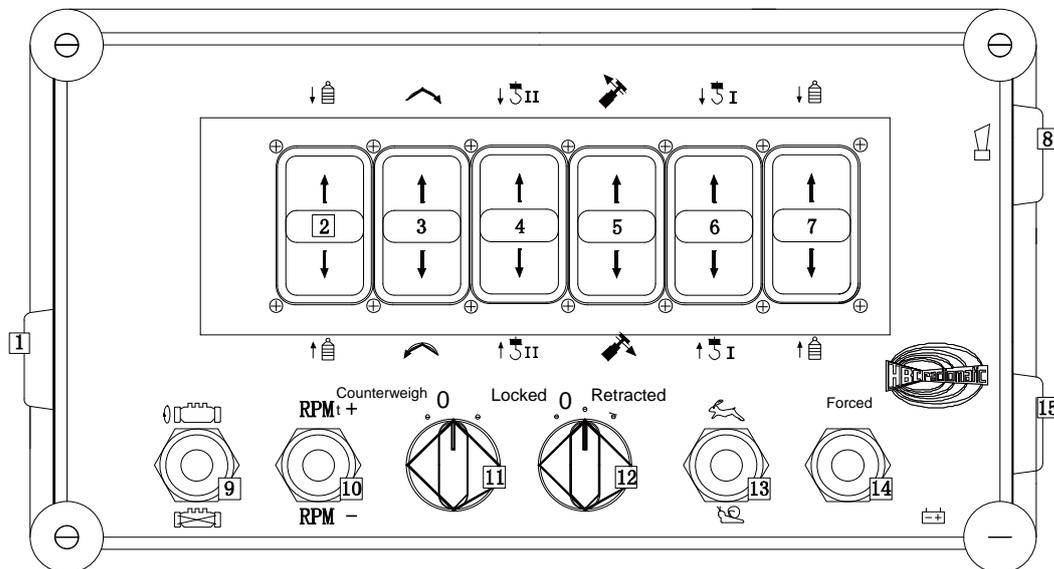


Figure 6-3 Control panel, remote controller

Table 6-5 Buttons and switches on the control panel

Pos.	Description	Pos.	Description
1	iON key	9	Toggle switch Engine on / off
2	Button Extending or retracting the left counterweight cylinder	10	Tumbler pushbutton Increasing / decreasing engine RPM
3	Button Slewing to the left or right	11	Rotary switch Counterweight operational
4	Button Spooling up / reeling off auxiliary winch	12	(Not used)
5	Button Derricking main boom up / down	13	Toggle switch Pre-selection of rapid gear / slow gear
6	Button Spooling up / reeling off main winch	14	Bypass switch
7	Button Extending or retracting the right counterweight cylinder	15	Button Emergency stop
8	Button Horn		

This manual only introduces the simple operating instructions. For details, refer to the *Operating Instructions for Remote Controller*.

Operating instructions

Make sure that the following prerequisites are met before you operate the remote controller:

- The button 15 is turned off.
- The iON key 1 (which records the frequency and address code of the remote control system) is inserted.

Result:

- LED flashes in red.

Press button 8 till the LED flashes in green that the remote controller is in function.

Operate the buttons or switches to activate the corresponding movements:

Button 2:

Extend or retract the left counterweight cylinder.

Button 3:

Slew to the left or right.

Button 4:

Spool up / reel off the auxiliary winch.

Button 5:

Derrick the boom up or down.

Button 6:

Spool up / reel off the main winch.

Button 7:

Extend or retract the right counterweight cylinder.

Button 8:

Operate the horn.

Switch 9:

Turn on and off the engine.

Switch 10:

Increase and decrease the engine RPM.

Switch 11:

Turn to the left position, and the buttons 2 and 7 are valid.

Button 13:

Upper position: The winch works at high speed.

Lower position: The slewing, derricking and main & auxiliary winch movements are at low speed.

Switch 14:

Bypass the switch-off of dangerous movements.

ZOOMLION

Truck Crane Operator'S Manual

Chapter 7 Transportation and Storage



Chapter 7 Transportation and Storage

7.1 Transportation

You can move the crane by its power for road-driving or by other carriers for a long distance. During transportation, chock the wheels and make the crane safe with wire ropes. Fully close the windows and door to keep rain and moisture out of the cab. Lock the door and windows. The positions to lift the crane are shown in the Figure 7-1.

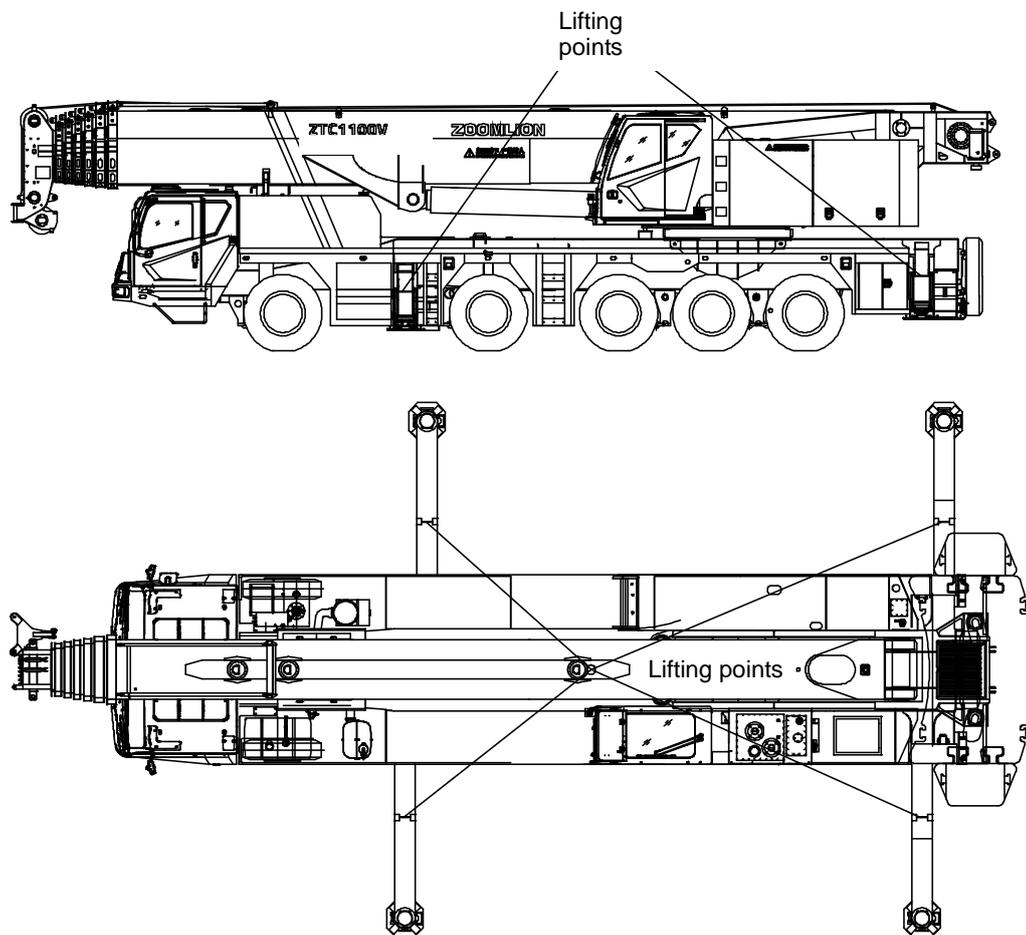


Figure 7-1 Crane lifting points



Before you lift, make sure that the sling has sufficient strength to hold the crane.

7.2 Storage

Do the steps that follow if you do not use the crane for a long time (more than three months):

- a) Lock the doors and the windows and switch off control instruments.
- b) Clean contamination off the crane.
- c) Fully retract all the cylinder pistons (except vertical cylinders).
- d) Fully extend the vertical cylinders to lift the tires away from the ground.
- e) Inflate the tires to specified pressure and put moisture-proof wooden wedges below the tires.
- f) Turn off the engine and cut off the power supply.
- g) If the battery is not used over a month, disconnect its connecting wire to the electrical system. If the crane is not used for a long period of time, charge it every three months.
- h) You must lubricate the surfaces of all the exposed metal components to prevent corrosion.
- i) Remove all contamination (dust and sand) from the wire ropes and lubricate them with ZG-3 calcium based graphite grease.
- j) Keep the crane in a garage. If not, take measures against rain, thunder and freeze.
- k) Operate the engine for more than 1 hour every three months. Examine the mechanisms at idle speed to make sure that they operate correctly.
- l) If you do not operate the crane for more than 18 months:
 - 1) Keep the crane clean and do the usual maintenance.
 - 2) Replace aged seal components.
 - 3) Do a general inspection of the engine to see if you must replace the coolant, diesel oil, and filters.
- m) Make sure that one person keeps the crane prepared for operation.